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ANATOMY

ORAL PRESENTAIONS

Abstract -ANAT -01

Antrum of highmore - its implications in dentistry

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The pyramid-shaped maxillary sinus (or antrum of Highmore) is the largest of the paranasalsinuses, and drains into the middle meatus of the nose The maxillary sinus was first discovered and illustrated by LeonardodaVinci, but the earliest attribution of significance was given to NathanielHighmore, the British surgeon and anatomist who described it in detail in his 1651 treatise It is present at birth as rudimentary air cells, and develops throughout childhood. Maxillary sinusitis is inflammation of the maxillary sinuses. Maxillary sinusitis is common due to the close anatomic relation of the frontal sinus, anterior ethmoidal sinus and the maxillary teeth, allowing for easy spread of infection. Differential diagnosis of dental problems needs to be done due to the close proximity to the teeth since the pain from sinusitis can seem to be dentally related. The maxillary sinus may drain into the mouth via an abnormal opening, an oroantralfistula, a particular risk after tooth extraction. Traditionally the treatment of acute maxillary sinusitis is usually prescription of a broad-spectrum cephalosporin antibiotic resistant to beta-lactamase, administered for 10 days. Recent studies have found that the cause of chronic sinus infections lies in the nasal mucus, not in the nasal and sinus tissue targeted by standard treatment.

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ABSTRACT -ANAT -02

Osodentoideum

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Osodontoideum (OO) is a rare anomaly of the second cervical vertebrae characterised by a separation of a portion of the odontoid process (also called the dens) from the body of the axis. The little bone is marked by a small oval corticated ossicle of which the size can range. The OO can be situated in the position of the odontoid process (orthotropic) or in the vicinity of the base of the occipital bone, more precisely in the area of the foramen magnum (dystopic) with no bony link to the body of the axis.The dens and the transverse ligaments of the axis are responsible to maintain the diameter of the spinal cord and to stabilize the atlantoaxial joint.The insufficient and unstable dens on which several ligaments are attached to, may render the transverse ligament incapable to stabilize the atlas on the axis which causes cervical instability. This increased atlantoaxial translation potentially leads to upper cervical cord or vertebral artery impingement.The osodontoideum is associated with multidirectional instability of C1 on C2.The goal of the physical therapy treatment for cervical instability is to enhance the function of the spinal stabilising subsystems and to decrease the stress on the involved spinal segments.

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ABSTRACT -ANAT -03

Erb's paralysis.

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The condition known as Erb's Palsy is caused by an injury to the brachial plexus—the nerves surrounding the shoulder. Erb's Palsy is not cerebral palsy, because it is not caused by brain injury or brain abnormalities. Erb's Palsy is also called brachial palsy, Erb-Duchenned paralysis, or Klumpke paralysis.Erb's Palsy is characterized by weakness or paralysis of the arm. The disorder causes varying amounts of impairment. The levels of impairment are known by some of the other names for the condition. When the upper arm is the only part of the limb affected, the condition is simply called a brachial plexus injury. Erb's palsy is the result of a nerve injury. All the arm's nerves are connected to a group of nerves near the neck which is called the brachial plexus. The brachial plexus nerves are responsible for feeling and motion in the hand, fingers, and arm. Erb's palsy can be caused by several things which can happen during a difficult delivery. Most cases of Erb's palsy are due to stretching of the nerve and will heal within six to twelve months of delivery; stretching shocks the nerve, but rarely leaves permanent damage. Occasionally a stretch injury will cause scar tissue to form around healthy nerves; in this case recovery may not be total. In cases of a simple stretch injury or mild tear, Erb's palsy will heal on its own, but the baby should receive physical therapy so that the arm does not stiffen. Gentle massage and range of motion therapy are used to keep the muscles strong and the joint from becoming contracted. More extensive nerve damage may require surgery. If the nerves cannot function properly, tendon transplants are sometimes used.

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ABSTRACT -ANAT -04

Bony Bridges of Atlas Vertebra.

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The anatomy of the atlas vertebra reveals complex, three-dimensional structures, showing extensive variability in morphology. Features of the atlas vertebra must be familiar before any spinal surgeries such as transpedicular screw fixation, transarticular screw fixation, interspinous wiring, and interlaminar clamp. So, this study was undertaken to assess the various dimensions of the first cervical vertebra and evaluate their relationship with the vertebral artery foramen, and also to decide the safe locations for different surgical methods. Atlas bridges, the bony outgrowths over the third segment of the vertebral artery are associated with compression of the artery and nerves. There are limited studies comparing morphometry of the complete atlas bridges and that of the ipsilateral transverse foramen. Bilateral and gender differences in the morphometry of the complete bridges remain relatively unexplored. One hundred and two atlas vertebrae (49 male and 53 females) obtained from the Osteology Department of National Museum of Kenya was used for the study. The presence of complete posterior atlas bridge and lateral bridge was noted. The anterior arch forms about one-fifth of the ring: its anterior surface is convex, and presents at its center the anterior tubercle for the attachment of the Longuscolli muscles and the anterior longitudinal ligament; posteriorly it is concave, and marked by a smooth, oval or circular facet (fovea dentis), for articulation with the odontoid process (dens) of the axis. The upper and lower borders respectively give attachment to the anterior atlantooccipital membrane and the anterior atlantoaxial ligament; the former connects it with the occipital bone above, and the latter with the axis below. The posterior arch forms about two-fifths of the circumference of the ring: it ends behind in the posterior tubercle, which is the rudiment of a spinous process and gives origin to the Recti capitisposterioresminores and the ligamentumnuchae. The diminutive size of this process prevents any interference with the movements between the atlas and the skull. The posterior part of the arch presents above and behind a rounded edge for the attachment of the posterior atlantooccipital membrane, while immediately behind each superior articular process is a groove (sulcus arteriaevertebralis), sometimes converted into a foramen by a delicate bony spiculum which arches backward from the posterior end of the superior articular process. This groove represents the superior vertebral notch, and serves for the transmission of the vertebral artery, which, after ascending through the foramen in the transverse process, winds around the lateral mass in a direction backward and medially; it also transmits the suboccipital nerve (first spinal nerve). There are few studies of the lateral bridge of the atlas reported in the literature. As its name implies, it is a lateral outgrowth of bone from the superior articular facet or lateral mass to the posterior root of the transverse process of the atlas.

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ABSTRACT -ANAT -05

Accessory Mental Foramen.

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Accessory mental foramen is a rare anatomical variation. Even so, in order to avoid neurovascular complications, particular attention should be paid to the possible occurrence of one or more accessory mental foramen during surgical procedures involving the mandible. Accessory mental foramen (AMF) is a rare anatomical variation with a prevalence ranging from 1.4 to 10%. Even so, in order to avoid neurovascular complications, particular attention should be paid to the possible occurrence of one or more AMF during surgical procedures involving the mandible. Careful surgical dissection should be performed in the region so that the presence of AMF can be detected and the occurrence of a neurosensory disturbance or haemorrhage can be avoided. Although this anatomical variation is rare, it should be kept in mind that an AMF may exist. Trigeminal neuralgia was diagnosed. On the basis of diagnostic test results, peripheral neurectomy of mental nerve was planned. Failure to do neurectomy of mental nerve branch in the reported case, coming out from AMF, would have resulted in recurrence of pain and eventually failure of the procedure. Remarkable studies of mandibular accessory foramina and canals are found in the literature. However, most of these studies are from dry mandibles and dissections; clinical and radiographic studies are performed less frequently. An even smaller proportion of cases are of CT images, particularly from multi-slice CT machines. The presence of one or more accessory foramina, usually called mental foramina, is among the variations described in the literature. It has been assumed that such variation results from the ramification of the mental nerve before it passes through the MF. This was observed in the present case in terms of an intra-osseous bifurcation producing two intra-osseous courses of the mental nerve, associated with the MF and the AMF. Although the accessory foramen in this case was located in the lingual cortical bone, the term lingual accessory ‘mental’ foramen still seems appropriate because it refers to the nerve that bifurcates to pass through this anatomical landmark. It is important to differentiate the AMF from a nutritive foramen. The AMF is defined as a bony foramen originating from the mandibular canal, as observed in this case. Nutritive foramina, on the other hand, do not originate from the mandibular canal and are significantly smaller. A literature search revealed that AMFs have been reported only in the buccal cortical of the mandible; hence, the present case is first reported of an AMF in the lingual cortical bone. The presence of accessory foramina and canals in the mandible is frequently overlooked in clinical procedures. It is important to stress that these anatomical variations may only be pre-surgically detected on imaging studies, and such detection may have a direct influence on therapeutic success.

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POSTER PRESENTATIONS

ABSTRACT -ANAT -01

Palatel Anomalies

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Cleft lip and palate is a common human birth defect, and its causes are being dissected through studies of human populations and through the use of animal models. Mouse models in particular have made a substantial contribution to our understanding of the gene pathways involved in palate development and the nature of signaling molecules that act in a tissue-specific manner at critical stages of embryogenesis. Related work has provided further support for investigating the role of common environmental triggers as causal covariates. Practical clinical matters are foremost in the minds of those treating patients with cleft palate deformity. The urgency of adequate functional repair has caused a vast body of literature to arise. Although it is recognized that cleft palate deformity is associated with other congenital malformations, inevitably consideration of this condition by the several interested specialities has become overly restricted to the affected region, the facial skull. Hemifacial microsomia (HFM) refers to a broad spectrum of congenital abnormalities that manifests as variable hypolasia of structures derived from the first and second brachial arches. Clinically it manifests as under development of half, and in rarer cases, both sides of the facial skeleton and its overlying soft tissue. While the palatal musculature is derived, in part, from the first and second brachial arches, it is not surprising that HFM children frequently display palatal anomalies. The incidence of palatal anomalies in the HFM population has, however, been the source of little formal investigation. Palatal anomalies are frequently associated with other congenital malformations and may be seen as features of numerous genetic syndromes. Occasionally, cleft palate or velopharyngeal dysfunction may be the first and most conspicuous presenting sign of a genetic disorder, whereas the associated features and the underlying syndrome remain undiagnosed for many years. Clefts of the palate (CPs) are associated with bony, as well as soft-tissue, abnormalities. Clefts of the secondary palate may be isolated or associated with clefts of the primary palate. Although clefts of the secondary palate are midline defects, those involving the primary palate are usually asymmetric, with the vomer attached to the noncleft side. The dental arch on the noncleft side usually splays outward due to the lack of restraining force from the lip, and the palate is foreshortened in the anteroposterior direction.

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Abstract -ANAT -02

Extra Ocular Muscles of the Eye Ball

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There are six muscles that are present in the orbit (eye socket) that attach to the eye to move it. These muscles work to move the eye up and down, side to side, and to rotate the eye. The superior rectus is an extra ocular muscle that attaches to the top of the eye. It moves the eye upward. The inferior rectus is an extra ocular muscle that attaches to the bottom of the eye. It moves downward. The medial rectus is an extra ocular muscle that attaches to the side of the eye near the nose. It moves the eye toward the nose. The lateral rectus is an extra ocular muscle that attaches to the side of the eye near the temple. It moves the eye outward. The superior oblique is an extra ocular muscle that comes from the back of the orbit and travels through a small pulley (the trochlea) in the orbit near the nose. It then attaches to the top of the eye. The superior oblique rotates the eye inward around the long axis of the eye (front to back). The superior oblique also moves the eye downward. The inferior oblique is an extra ocular muscle that arises in the front of the orbit near the nose. It then travels outward and backward in the orbit before attaching to the bottom part of the eyeball. It rotates the eye outward along the long axis of the eye (front to back). The inferior oblique also moves the eye upward. The initial clinical examination of the intraocular eye muscles is done by examining the movement of the globe of the eye through the *six cardinal eye movements*. When the eye is turned in (nasally) and horizontally, the function of the medial rectus muscle is being tested. When it is turned out (temporally) and horizontally, the function of the lateral rectus muscle is tested. When turning the eye down and out, the inferior rectus is contracting. Turning the eye up and out relies on the superior rectus. Paradoxically, turning the eye up and in uses the inferior oblique muscle, and turning it down and in uses the superior oblique. All of these six movements can be tested by drawing a large "H" in the air with a finger or other object in front of a patient's face and having them follow the tip of the finger or object with their eyes without moving their head. Having them focus on the object as it is moved in toward their face in the midline will test *convergence*, or the eyes' ability to turn inward simultaneously to focus on a near object.

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Abstract -ANAT -03

Facial Artery

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The facial artery (external maxillary artery in older texts) is a branch of the external carotid artery that supplies structures of the superficial face. It is also called "Anaesthetist's artery.The blood vessel arises from the external carotid artery's carotid triange, and it travels a course passing the lingual artery. From there, it moves under the digrastic and stylohyoid muscles and it eventually reaches the submandibular gland and the side of the nose. It ends under near the eye, but under the name of the angular arteryThe branches of the cervical portion of the facial artery are the ascending palatine, tonsillar, glandular, and submental. The facial branches are the inferior labial, superior labial, lateral nasal, angular, and the muscular. It then runs between the styloglossus and the stylopharyngeus muscle. Then it runs between the internal pterygoid muscle and the superior constrictor muscle of the pharynx. Reaching the levator palati muscle, it divides into two branches: the palatine and the tonsillar. The palatine follows the course of the levator palati muscle to supply the soft palate and anastomoses with the ascending palatine artery of the opposite side. The tonsillar branch perforates the superior constrictor muscle of the pharynx and supplies the tonsil and the auditory tubes. It anastomoses with the tonsillar branches of the ascending pharyngeal and facial arteries. The tonsillar artery is smaller than the ascending palatine artery. It passes upward between the internal pterygoid and the styloglossus muscleThe main arterial supply of the facial skin envelope is the facial artery which serves as the main pedicle for a number of facial flaps, including a facial transplant graft. This study explored the course of the facial artery and vein, branching patterns, terminations, and anomalous variants. Cadaveric dissections of 201 facial arteries and 198 facial veins were performed. All branches originated from a single facial arterial trunk in 86% of specimens and branching patterns were symmetrical in 53%. The facial artery predominantly terminated as a lateral nasal artery (49%). In 5 cases, the facial artery was undetectable with transverse facial arterial dominance (1 case bilateral). The facial vein was predictable in position except for 2 instances, being replaced by a transverse facial vein (unilateral). Facial arterial dominance in facial blood supply is common but unpredictable. Careful vascular workup prior to facial transplantation and unipedicled flap procedures is therefore essential

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Abstract -ANAT -04

Facial Nerve and Its Branches

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The facial nerve is the seventh cranial nerve, or simply cranial nerve VII. It emerges from the brainstem between the pons and the medulla, and controls the muscles of facial expression, and functions in the conveyance of taste sensations from the anterior two-thirdsof the tongue and oral cavity. It also supplies preganglionic parasympathetic fibers to several head and neck ganglia.The facial nerve consists of a motor and a sensory part, the latter being frequently described under the name of the nervus intermedius . The two parts emerge at the lower border of the pons in the recess between the olive and the inferior peduncle, the motor part being the more medial, immediately to the lateral side of the sensory part is the acoustic nerve.The branchiomotor component of the facial nerve controls the muscle of facial expression through five branches which are distributed in the superfical fascia of the head and neck. These branches include: A.Temporal - auricular and fronto-occipitalis muscles B.Zygomatic - muscles of the zygomatic arch and orbit C.Buccal - muscles in the cheek and above the mouth D.Mandibular - muscles in the region of the mandible E.Cervical - the platysma muscle General course:The facial nerve has six named segments:1.intracranial (cisternal) segment 2.meatal segment (internal auditory canal) - 8mm - zero branches 3.labyrinthine segment (IAC to geniculate ganglion) - 3-4mm - 3 branches (from geniculate ganglion) 4.tympanic segment (from geniculate ganglion to pyramidal eminence) - 8-11mm - zero branches 5.mastoid segment (from pyramidal eminence to stylomastoid foramen) - 8-14mm - 3 branches 6.extratemporal segment (from stylomastoid foramen to division into major branches) 15-20mm - 9 branches Anatomically, the course of the facial nerve can be divided into two parts:•Intracranial - the course of the nerve through the cranial cavity, and the cranium itself.•Extracranial - the course of the nerve outside the cranium, through the face and neck. Intracranial:1.Firstly the two roots fuse to form the facial nerve.2.Next, the nerve forms the geniculate ganglion (a ganglion is a collection of nerve cell bodies)3.Lastly, the nerve gives rise to the greater petrosal nerve (parasympathetic fibres to glands), the nerve to stapedius (motor fibres to stapedius muscle), and the chorda tympani (special sensory fibres to the anterior 2/3 tongue).Extracranial :The first extracranial branch to arise is the posterior auricular nerve. It provides motor innervation to the some of the muscles around the ear. Immediately distal to this, motor branches are sent to the posterior belly of the digastric muscle and to the stylohyoid muscle.

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Abstract -ANAT -05

Development of Face

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The facial prominences are five swellings that appear in the fourth week and come from the first and second pharyngeal arch. They are basically made of mesenchym that comes from the neural crest.Fourth week of development ◦Primordia of the face appear at the cephalic end of the embryo.◦Two nasal placodes cap the bulbous frontal prominence.◦The optic discs appear posterolateral to the frontal prominence.◦Three paired branchial arches have formed.◦The first arches split into maxillary and mandibular prominences. The hyoid arches are the second pair.◦Between the first arches and frontal prominence, the buccopharyngeal membrane becomes fenestrated.Fifth week of development Nasal pits develop in the nasal placodes, and the rims of the placodes differentiate into medial and lateral nasal prominences.◦The lens vesicles invaginate and close within the optic discs. The mesenchyme of the mandibular arch fills in across the midline.The caudal end of the medial nasal prominences begins to fuse with the maxillary prominences.At the beginning of the sixth week of development ◦The nasals have shifted to a more ventral, central position◦Growing and shifting subectodermal mesenchyme smooths out the furrows between prominences and arches, and the second arch becomes more massive. ◦Six auricular hillocks, which will become the pinna of the ears, form on the mandibular and hyoid arches.By the end of the sixth week of development ◦Medial and lateral nasal prominences fuse.◦Maxillary prominences begin the formation of the upper jaw.◦The midline approximation of the medial nasal prominences forms the nasal septum.At the beginning of the seventh week of development ◦The tip of the nose is elevated between the medial nasal prominences and is visible in profile.◦Eyelids become prominent.◦The pinna of the ear takes shape.End of the seventh week of development ◦The pattern of facial features has taken on a human appearance. However, facial proportions develop during the fetal period.◦The fusion of the medial nasal prominences, which forms the central axis of the nose and the philtrum of the lip, is complete.Final Development of the Face:From the beginning of the eighth week of development to birth, the final facial development occurs slowly and consists mainly of changes in the proportion and relative positions of the facial components. During the early fetal period, the nose is flat and the mandible is underdeveloped. They obtain their characteristic form while facial development is being completed. As the brain enlarges, it creates a prominent forehead, the eyes move medially, and the external ears rise.

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BIOCHEMISTRY

ORAL PRESENTATIONS

Abstract -Bio -01

Immunoglobulins

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An antibody (Ab), also known as an immunoglobulin (Ig), is a large Y-shape protein produced by B cells that is used by the immune system to identify and neutralize foreign objects such as bacteria and viruses. The antibody recognizes a unique part of the foreign target, called an antigen. Each tip of the "Y" of an antibody contains a paratope that is specific for one particular epitope on an antigen, allowing these two structures to bind together with precision. Using this binding mechanism, an antibody can tag a microbe or an infected cell for attack by other parts of the immune system, or can neutralize its target directly. The production of antibodies is the main function of the humoral immune system. Igs are produced by the lymphocytes and are found in fraction of blood called gamma globulin. Gerald M. Edelman and Rodney Robert Porter are the notable researchers who worked extensively on purification and structural analysis of Igs, particularly the IgG type. The basic structure of immunoglobulins are as follows- it consists of 2 identical light chains and 2 identical heavy chains, the heavy and light chains are joined together by interchain disulphide bonds and non-covalent interactions. The number of interchain disulphide bonds varies among different Igs. Within the polypeptide chains i.e the heavy and light chains there are also present intra-chain disulphide bonds. Amino acid sequence of both heavy and light chains of an Ig characterizes two distinct regions of the chains based on variability of the amino acid sequence, known as VARIABLE (V) and CONSTANT (C) regions. Ligh tand heavy chains are composed of both a variable and constant region designated VL and CL (light chains) and VH and CH(heavy chains).The amino acid sequence of the variable region form the N-terminal ends of the chains and determine antigenic specificity of the Igs. Constant regions are the same for each specific class of Ig and carry the effector sites. Light chain-VL-about 100-110amino acids,CL-100-110 amino acids. There are two types of light chains, kappa and lambda,(κ and λ)the κ are twice as much as λ. Heavy chains-VH-110 amino acids,CH-330-440 amino acids. There are 5 types of heavy chains which defines the class of Igs, namely, Alpha, Gamma, Miu, Delta and Epsilon (α, γ, μ, δ, ε).The heavy chains are between 53-75KDa.The variable region makes up a quarter of the entire heavy chain while ¾ of the remaining chain is the constant region.

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Abstract -Bio -02

Hemoglobin

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Hemoglobin also spelled haemoglobin and abbreviated Hb or Hgb, is the iron-containing oxygen-transport metalloprotein in the red blood cells of all vertebrates as well as the tissues of some invertebrates. Hemoglobin in the blood carries oxygen from the respiratory organs to the rest of the body, where it releases the oxygen to burn nutrients to provide energy to power the functions of the organism in the process called metabolism. In mammals, the protein makes up about 96% of the red blood cells' dry content by weight, and around 35% of the total content including water. Hemoglobin has an oxygen binding capacity of 1.34 mL O2 per gram of hemoglobin, which increases the total blood oxygen capacity seventy-fold compared to dissolved oxygen in blood. The mammalian hemoglobin molecule can bind up to four oxygen molecules. Hemoglobin is involved in the transport of other gases: it carries some of the body's respiratory carbon as carbaminohemoglobin, in which CO2 is bound to the globin protein. The molecule also carries the important regulatory molecule nitric oxide bound to a globin protein thiol group, releasing it at the same time as oxygen. Hemoglobin is also found outside red blood cells and their progenitor lines. Other cells that contain hemoglobin include the A9 dopaminergic neurons in the substantianigra, macrophages, alveolar cells, and mesangial cells in the kidney. In these tissues, hemoglobin has a non-oxygen-carrying function as an antioxidant and a regulator of iron metabolism. Hemoglobin and hemoglobin-like molecules are also found in many invertebrates, fungi, and plants. In these organisms, hemoglobins may carry oxygen, or they may act to transport and regulate other things such as carbon dioxide, nitric oxide, hydrogen sulfide and sulfide. A variant of the molecule, called leghemoglobin, is used to scavenge oxygen away from anaerobic systems, such as the nitrogen-fixing nodules of leguminous plants, before the oxygen can poison the system.

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Abstract -Bio -03

Antioxidant

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An antioxidant is a molecule that inhibits the oxidation of other molecules. Oxidation is a chemical reaction that transfers electrons or hydrogen from a substance to an oxidizing agent. Oxidation reactions can produce free radicals. In turn, these radicals can start chain reactions. When the chain reaction occurs in a cell, it can cause damage or death to the cell. Antioxidants terminate these chain reactions by removing free radical intermediates, and inhibit other oxidation reactions. They do this by being oxidized themselves, so antioxidants are often reducing agents such as thiols, ascorbic acid, or polyphenols. Substituted phenols and derivatives of phenylenediamine are common antioxidants used to inhibit gum formation in gasoline (petrol). Although oxidation reactions are crucial for life, they can also be damaging; plants and animals maintain complex systems of multiple types of antioxidants, such as glutathione, vitamin C, vitamin A, and vitamin E as well as enzymes such as catalase, superoxide dismutase and various peroxidases. Insufficient levels of antioxidants, or inhibition of the antioxidant enzymes, cause oxidative stress and may damage or kill cells. Oxidative stress is damage to cell structure and cell function by overly reactive oxygen-containing molecules and chronic excessive inflammation. Oxidative stress seems to play a significant role in many human diseases, including cancers. The use of antioxidants in pharmacology is intensively studied, particularly as treatments for stroke and neurodegenerative diseases. For these reasons, oxidative stress can be considered to be both the cause and the consequence of some diseases. Antioxidants are widely used in dietary supplements and have been investigated for the prevention of diseases such as cancer, coronary heart disease and even altitude sickness. Although initial studies suggested that antioxidant supplements might promote health, later large clinical trials with a limited number of antioxidants detected no benefit and even suggested that excess supplementation with certain putative antioxidants may be harmful. Antioxidants also have many industrial uses, such as preservatives in food and cosmetics and to prevent the degradation of rubber and gasoline.

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Abstract: Bio -04

Salivary Markers of Systemic Disease

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For decades, dental health professionals have used saliva to help assess the risk of caries by measuring its buffering capacity and bacterial content. Now, saliva is increasingly being used as an investigational aid in the diagnosis of systemic diseases that affect the function of the salivary glands and the composition of the saliva, such as Sjogren's syndrome, alcoholic cirrhosis, cystic fibrosis, sarcoidosis, diabetes mellitus and diseases of the adrenal cortex. The introduction of polymerase chain reaction methods has led to the use of oral fluids as a source of microbial DNA for detecting viruses like the herpes virus associated with Kaposi's sarcomaand bacteria and Helicobacter pylori, which is associated with gastritis, peptic ulcers and possibly stomach cancer. In addition, the onset and severity of infectious diseases can be determined by monitoring the presence of antibodies to the microorganisms found in saliva and the oral cavity. Until recently, oral transmission of HIV through the saliva of infected individuals during dental treatment or as the result of biting or coughing has been considered less likely than vaginal or rectal transmission, but concerns about this mode of transmission have been growing. Monitoring HIV loads through saliva tests, as an adjunct to blood tests, helps in identifying high levels of HIV in the oral cavity that might place the patient at risk of transmitting the virus orally. Typical respiratory pathogens, such as Streptococcus pneumoniae, Streptococcus pyogenes, Mycoplasma pneumoniae and Haemophilusinfluen- zae, colonize the dental plaque of intensive care patients and residents of nursing homes. Once established in the mouth, these pathogens can be aspirated into the lung and cause a nosocomial infection. The interaction among enzymes in the saliva that promote the adhesion and colonization of mucosal surfaces by respiratory pathogens may explain the potential role of oral bacteria in the pathogenesis of respiratory infection. Yet another recent example of the role of saliva in the diagnosis of systemic health is evident in breast cancer research, where salivary testing for markers of the disease are being studied for potential use in conjunction with mammography. Similarly, saliva is being used to detect a specific estrogenic hormone, estradiol, which has been found to predict preterm labour. The FDA-approved test for estradiol can be used at home by women at risk for premature, low-birth-weight babies. Here again, salivary testing is being used to measure indicators of systemic conditions that help in explaining a particular hormonal response.

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Abstract -Bio -05

Transgenic Animals

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Transgenic animal is one that carries foreign gene that has been deliberately inserted to its genome! The gene is constructed using recombinant DNA technology. Advantages of trangenic animals is increased growth rate, improved disease resistance,improved wool quality, improved nutritional quality. Inserted gene has multiple functions,breedingproblems,sometimes leads to mutagenesis ,these are the major disadvantages.methods to produce transgenic animals are embryonic stem cell method,pro nucleus method ,retrovirus mediated gene transfer.transgenic animals are nowadays used for screening many drugs.

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Abstract -Bio -06

Alzheimer's disease

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Alzheimer disease is the most common form of dementia among older people. Dementia is a brain disorder that seriously affects a persons ability to carry out daily activities. It begins slowly . It first involves the parts of the brain that control thougt, memory and language. People with AD mao have trouble remembering things that happened recently or names of people they know. AD usualy begins afterage of 60, the risk goes up as you get older. AD is a progressive disease which means that gradually, over time,more parts of the brain are damaged . As this happens,the symptoms become more severe.

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Abstract -Bio -07

Transcription and Translation

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Transcription occurs in the cell nucleus where DNA is housed. Think of DNA as instructions to build hardware (proteins), unfortunately, these instructions are in another language and incomprehensible to the workers that will eventually assemble the hardware. This is where mRNA will come into the picture - to provide new instructions that will be used by the workers. In transcription DNA is unzipped and the enzyme RNA polymerase runs along the template strand of the DNA. The template strand of DNA can be identified by finding the nucleotide sequence T A C at the 3' end (If the strand is written backwards it may look like C A T at the 3' end). This identifies that strand as the template and the other strand, the information strand, will not be used in this transcription (this does not mean, however, that it may not be used in future transcription processes). As the RNA polymerase runs along the DNA template strand it will add the complementary RNA nucleotides to the DNA nucleotides. This means that G will be paired with C, and visa versa, and A (DNA) will be paired with U (RNA - rather than T in DNA replication) and T (DNA) paired with A (RNA). When the single helix mRNA strand is complete it will separate from the DNA and the DNA will re-zip into the double helix. Translation occurs when the mRNA strand moves out of the nucleus and into the cytoplasm. At this point mRNA, rRNA and tRNA all come together. The rRNA consists of two parts, the large ribosomal unit and the small ribosomal unit. On the large ribosomal unit are two sites- the A site and the P site. These will be the sites of polypeptide synthesis and elongation. The rRNA is like the factory of translation and if rRNA is the factory than tRNA is the worker. The tRNA molecules have an amino acid (the monomer of proteins) attachment site and it also carries an anticodon. The anticodon is the complementary nucleotide sequence to a given codon. The tRNA will pick up the appropriate amino acid in the cytoplasm that is coded for by the mRNA codon that its anticodon matches. Think of it as a lock and key process.

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Abstract -Bio -08

One Gene One Polypeptide Hypothesis

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One gene–one enzyme hypothesis, idea advanced in the early 1940s that each gene controls the synthesis or activity of a single enzyme. The concept, which united the fields of genetics and biochemistry, was proposed by American geneticist George Wells Beadle and American biochemist Edward L. Tatum, who conducted their studies in the mold Neurosporacrassa. Their experiments involved first exposing the mold to mutation-inducing X-rays and then culturing it in a minimal growth medium that contained only the basic nutrients that the wild-type, or nonmutated, strain of mold needed to survive. They found that the mutant strains of mold required the addition of specific amino acids to the minimal medium in order to grow. Using this information, the researchers were able to associate mutations in specific genes to the disruption of individual enzymes in the metabolic pathways that normally produced the missing amino acids. This discovery won Beadle and Tatum the 1958 Nobel Prize for Physiology or Medicine (shared with American geneticist Joshua Lederberg). Although the hypothesis was amply verified in principle, it has undergone considerable sophistication since the 1940s.the proposed connection between a single gene and a single protein enzyme outlived the protein theory of gene structure. In a 1948 paper, Norman Horowitz named the concept the "one gene-one enzyme hypothesis". By the early 1950s, most biochemists and geneticists considered DNA the most likely candidate for physical basis of the gene, and the one gene-one enzyme hypothesis was reinterpreted accordingly and known that not all genes encode an enzyme and that some enzymes are made up of several short polypeptides encoded by two or more genes. Presently, the one gene-one polypeptide perspective cannot account for the various spliced versions in many eukaryote organisms which use a spliceosome to individually prepare a RNA transcript depending on the various inter- and intra-cellular environmental signals. This splicing was discovered in 1977.

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Abstract -Bio -09

Oral Cancer

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Cancers of the oral cavity and oropharynx represent approximately three percent of all malignancies in men and two percent of all malignancies in women Squamous cell carcinoma, which arises from the oral mucosal lining, accounts for over 90 percent of these tumors. The strong association between cancers of the oral cavity and pharynx with tobacco use is well established. Epidemiological studies show that the risk of developing oral cancer is five to nine times greater for smokers than for nonsmokers, and this risk may increase to as much as 17 times greater for extremely heavy smokers of 80 or more cigarettes per day.Snuff and chewing tobacco have also been associated with an increased risk for oral cancer. In India and Southeast Asia, the chronic use of betel quid (paan) in the mouth has been strongly associated with an increased risk for oral cancer. The quid typically consists of a betel leaf that is wrapped around a mixture of areca nut and slaked lime, usually with tobacco and sometimes with sweeteners and condiments. The slaked lime results in the release of an alkaloid from the areca nut, which produces a feeling of euphoria and well-being in the user. Betel quid chewing often results in a progressive, scarring precancerous condition of the mouth known as oral submucous fibrosis. In India, one study showed a malignant transformation rate of 7.6 percent for oral submucous fibrosis. Recent evidence suggests that human papillomavirus (HPV) may be associated with some oral and oropharyngeal cancers. HPV-16 has been detected in up to 22 percent of oral cancers, and HPV-18 has been found in up to 14 percent of cases.Dietary factors, such as a low intake of fruits and vegetables, may also be related to an increased cancer risk.As previously indicated, chronic actinic exposure is associated with the development of carcinomas of the lip vermilion. Early oral cancers and precancerous lesions are often subtle and asymptomatic. Therefore, it is important for the clinician to maintain a high index of suspicion, especially if risk factors such as tobacco use or alcohol abuse are present. Invasive oral squamous cell carcinoma is often preceded by the presence of clinically identifiable premalignant changes of the oral mucosa. These lesions often present as either white or red patches, known as leukoplakia and erythroplakia. As the cancer develops, the patient may notice the presence of a nonhealing ulcer. Later-stage symptoms include bleeding, loosening of teeth, difficulty wearing dentures, dysphagia, dysarthria, odynophagia, and development of a neck mass.

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Abstract -Bio -10

Gene Expression and Regulator in Eukaryotes

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Gene expression refers to genes being 'turned on' and producing a product. The product could be an enzyme, a structural protein, or a control molecule. Studies of gene expression typically measure the production of mRNA. Most mechanisms that control gene expression do so by controlling transcription, the synthesis of mRNA. However there are other mechanisms for controlling the rate of protein synthesis that occur downstream (between transcription and translation). Regulation of gene expression includes a wide range of mechanisms whereby cells increase or decrease the production of gene products (protein or RNA) and is informally termed as gene regulation. Sophisticated gene expression programs widely exist; e.g., triggering developmental pathways, responding to environmental stimuli, or adapting to new food sources. Almost any step of gene expression can be modulated, from transcriptional initiation, to RNA processing, and to proteins' post-translational modification. In multicellular organisms, gene regulation drives the processes of cellular differentiation and morphogenesis, leading to the creation of different cell types that possess different gene expression profiles, and hence produce different proteins/have different ultrastructures that suit them to their functions. Any step of gene expression may be modulated, from the DNA-RNA transcription step to post-translational modification of a protein. The following is a list of stages where gene expression is regulated, the most extensively utilised point is Transcription Initiation: Chromatin domains, Transcription,Post-transcriptional modification, RNA transport, Translation, mRNA degradation. There are several methods used by eukaryotes such as Altering the rate of transcription of the gene. This is the most important and widely-used strategy and the one we shall examine here. However, eukaryotes supplement transcriptional regulation with several other methods: Altering the rate at which RNA transcripts are processed while still within the nucleus. [Discussion of RNA processing], Altering the stability of messenger RNA (mRNA) molecules; that is, the rate at which they are degraded. [Link to discussion of RNA interference], Altering the efficiency with which ribosomes translate the mRNA into a polypeptide.

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BIOCHEMISTRY- POSTER PRESENTATIONS

Abstract -Bio -01

Obesity

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Obesity is a medical condition in which excess body fat has accumulated to the extent that it may have an adverse effect on health. It is defined by body mass index and further evaluated in terms of fat distribution via the waist hip ratio and total cardiovascular risk factors. Obesity is most commonly caused by a combination of excessive food energy intake, lack of physical activity, and genetic susceptibility. Dieting and physical exercise are the mainstays of treatment for obesity. Diet quality can be improved by reducing the consumption of energy-dense foods such as those high in fat and sugars, and by increasing the intake of. Anti - obesity drugs may be taken to reduce appetite or decrease fat absorption when used together with a suitable diet. If diet, exercise and medication are not effective, a gastric balloon may assist with weight loss, or surgery may be performed to reduce stomach volume and/or bowel length, leading to feeling full earlier and a reduced ability to absorb nutrients from food. Excessive body weight is associated with various diseases, particularly cardiovascular diseases, certain types of cancer and asthma. As a result, obesity has been found to reduce life expectancy. Certain physical and mental illnesses and the pharmaceutical substances used to treat them can increase risk of obesity. Medical illnesses that increase obesity risk include several rare genetic syndromes as well as some congenital or acquired conditions: hypothyroidism, growth hormone deficiency. A sedentary lifestyle plays a significant role in obesity. A review found 63 of 73 studies (86%) showed an increased rate of childhood obesity with increased media exposure, with rates increasing proportionally to time spent watching television. In children, there appear to be declines in levels of physical activity due to less walking and physical education.

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Abstract -Bio -02

Snake Venom may Cure Cancer

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Cytotoxic effects of snake venom have potential to degrade/destroy tumor cells. Snake venom has mainly two functions; 1) paralyzes the prey and 2) starts the digestive process. Enzymes present in snake venom hydrolyse proteins and membrane components, which lead to tissue necrosis and blood clotting. Components of venom are responsible for paralysis attack on nerve membrane and branches and neuro-muscular junctions. Cytotoxins and cardio toxins in the venom causes damage to the cell membrane or interfere with the transport of substances or the transduction of signals across the membranes. A component of snake venom has demonstrated its ability to inhibit cancer cell migration in two different cancer models. The protein, called contortrostatin, seems to block cell migration in a novel way. The integrins are a family of transmembrane receptor proteins that bind to components of the extracellular matrix. One of their functions is to grip the extracellular matrix, providing traction and allowing cells to migrate from one place to another. one particular integrin called αvβ3 is present on the surface of cancer cells and is thought to be critical in metastasis. Contortrostatin appears to block cell migration both by binding to a cell-surface protein in the integrin family, preventing it from gripping the extracellular matrix, and by scrambling signals to the cytoskeleton. The research established that contortrostatin had very effective inhibitory properties on adhesion to several extracellular matrix proteins such as fibronectin and vitronectin. They also found that it was effective in inhibiting tumor cell invasion. Using human breast cancer cells and human ovarian cancer cells in immunodeficient mice given daily intratumor injections of contortrostatin, they discovered that it inhibited tumor dissemination and angiogenesis. Integrins can bind to extracellular proteins only when they cluster in groups known as focal adhesions. Normally integrins are spread diffusely over the cell membrane, but when one molecule binds to its ligand it sends an intracellular signal that leads to the formation of a focal adhesion. It was reported that by crosslinking αvβ3 integrins, contortrostatin caused intracellular signals that are both spatially and temporally inappropriate. contortrostatin acts as both an antagonist, since it blocks αvβ3 binding to matrix proteins, and as an agonist, causing αvβ3 to send a faulty signal. These faulty signals disrupt both the focal adhesions and the actin cytoskeleton.

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Abstract -Bio -03

Vitamins in Oral Health

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Eating a healthy diet is just as important for the mouth as it is for the rest of our body. Vitamins and minerals play a very important role in our oral health. Eating a healthy diet with a lot of nutrients has many benefits like helping your tissues and bones fight off infections and clear away bacteria. Certain vitamins can also help reduce your chances of having tooth decay, gum disease, and mouth sores. Older people are more likely to have vitamin deficiencies because they may have problems absorbing nutrients from food. Younger people can also have conditions that cause difficulties absorbing nutrients. The presence of too much or too little of any nutrient can have harmful effects, particularly on the mouth and teeth, and may contribute to oral diseases and infection. Here are a few Vitamins and their role in oral health: Vitamin A helps maintain a healthy saliva flow that washes away bacteria and other harmful substances from your mouth and helps to keep the tissues in our mouth healthy. Sources of Vitamin are beef liver, sweet potatoes, melon and spinach. Lack of vitamin B3 can cause bad breath and canker sores in the mouth. Chicken and fish are rich in vitamin B3. Mouth sores can also develop when we do not consume enough of the vitamins B12 and B2. Red meat, chicken, liver, pork, fish and dairy products like milk, cheese, are good sources of vitamin B12. Vitamin B2 is found in foods like pasta, bagels, spinach, and almonds. Too little vitamin C will lead to bleeding gums and loose teeth. Sweet potatoes and oranges are great sources of vitamin C. People with vitamin K deficiency may have excessive bleeding after treatment or spontaneous bleeding. It may be caused by liver disease, long-term antibiotic use or other diseases. Green leafy vegetables, egg and beef are rich sources of vitamin k. It is very important to consume enough vitamin D because it helps our body to absorb calcium.

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Abstract -Bio -04

Sickle Cell Anemia

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Sickle-cell disease (SCD), or sickle-cell anaemia (SCA) or drepanocytosis, is a hereditary blood disorder, characterized by red blood cells that assume an abnormal, rigid, sickle shape. Sickling decreases the cells' flexibility and results in a risk of various complications. The sickling occurs because of a mutation in the haemoglobin gene. Individuals with one copy of the defunct gene display both normal and abnormal haemoglobin. This is an example of codominance. Life expectancy is shortened. Patients can live into their 70s or beyond. The two hemoglobin types inherited will determine the shape of the red blood cell (RBC). When both parents have Sickle Cell Trait, there is a 25 percent that the baby will have normal hemoglobin (AA), a 50 percent chance the baby will have Sickle Cell Trait (AS), and a 25 percent that the baby will have Sickle Cell Anemia (SS). These chances remain the same with each pregnancy. Normal RBC's are smooth surfaced, enabling them to change their shape to flow through small blood vessels. Under certain conditions (ie acidosis, dehydration, infection, and low oxygen. etc.), RBC's containing Sickle Hemoglobin become rigid, elongated, and sickle shaped. Some RBCs sickle immediately, while others remain normal for hours before sickling. Most RBCs containing Sickle Hemoglobin can sickle and then unsickle. After repeated cycles of sickling and unsickling, the RBC's become irreversibly sickled. Painful episodes are common complications in children with Sickle Cell Disease. When the sickled cells are unable to flow through small blood vessels they obstruct blood flow causing vascular occlusion. Vaso-occlusion reduces blood flow to an area of the body resulting in pain. This can occur anywhere in the body, including fingers, arms, legs, ribs, abdomen, and organs such as the spleen, brain, and eyes. Painful crises are treated with analgesics or opioid administration at regular intervals until the crisis has settled .The first approved drug for the treatment of sickle-cell anaemia is hydroxyurea. It reactivates fetal haemoglobin production in place of the haemoglobin S that causes sickle-cell anaemia. The patients will take a 1 mg dose of folic acid daily for life. Blood transfusions are often used in the management of sickle cell disease in acute cases and to prevent complications by decreasing the number of red blood cells (RBC) that can sickle. Bone marrow transplants have proven to be effective in children. Bone marrow transplants are the only known cure for Sickle cell Anemia.

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Abstract -Bio -05

AIDS

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Human immunodeficiency virus infection / acquired immunodeficiency syndrome (HIV/AIDS) is a disease of the human immune system caused by infection with human immunodeficiency virus (HIV). HIV makes it difficult for the body to fight off infections. Genetic research indicates that HIV originated in west-central Africa during the late nineteenth or early twentieth century. AIDS was first recognized by the Centers for disease control and prevention (CDC) in 1981 and its cause—HIV infection—was identified in the early part of the decade. Since its discovery, AIDS has caused an estimated 36 million deaths (as of 2012). As of 2012, approximately 35.3 million people are living with HIV globally. HIV/AIDS is considered a Pandemic—a disease outbreak which is present over a large area and is actively spreading. There is no cure for AIDS. However, there are new treatments that can slow down its progression. There are about 33 million people in the world who have HIV or AIDS. In the United States, about 1.2 million people have HIV or AIDS. More than 2 million people die each year from AIDS-related illnesses. During the initial infection, a person may experience a brief period of influenza like illness. This is typically followed by a prolonged period without symptoms. As the illness progresses, it interferes more and more with the immune system, making the person much more likely to get infections, including opportunistic infections and tumours that do not usually affect people who have working immune systems. HIV is transmitted primarily via unprotected sexual intercourse (including anal andoral sex), contaminated blood transfusions, hypodermic needles, and from mother to child during pregnancy, delivery, or breastfeeding. Some bodily fluids, such as saliva and tears, do not transmit HIV. Prevention of HIV infection, primarily through safe sex and needle exchange programs, is a key strategy to control the spread of the disease. There is no cure or vaccine; however, antiretroviral treatment can slow the course of the disease and may lead to a near-normal life expectancy. While antiretroviral treatment reduces the risk of death and complications from the disease, these medications are expensive and may be associated with side effects.

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Abstract -Bio -06

Cloning

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Cloning is the process of producing similar populations of genetically identical individuals that occurs in nature when organisms such as bacteria, insects or plants reproduce asexually. Cloning in biotechnology refers to processes used to create copies of DNA fragments (molecular cloning), cells (cell cloning), or organisms. The most famous clone was a Scottish sheep named Dolly. There are three different types of cloning: Gene cloning, which creates copies of genes or segments of DNA. Reproductive cloning, which creates copies of whole animals. Therapeutic cloning, which creates embryonic stem cells. Researchers hope to use these cells to grow healthy tissue to replace injured or diseased tissues in the human body. There are two ways to make an exact genetic copy of an organism in a lab: artificial embryo twinning and somatic cell nuclear transfer. Artificial Embryo Twinning technique mimics the natural process that creates identical twins. In nature, twinning happens after egg and sperm join, while the embryo is made of just a small number of unspecialized cells. Each half of the embryo continues dividing on its own, ultimately developing into separate, complete individuals. Since they developed from the same fertilized egg, the resulting individuals are genetically identical. Artificial embryo twinning uses the same approach, but it is carried out in a Petri dish. The embryos in the petri dish are placed into a surrogate mother, where they develop. Again, since all the embryos came from the same fertilized egg, they are genetically identical. Somatic cell nuclear transfer (SCNT), uses a different approach, but it produces the same result. This was the method used to create Dolly, the Sheep. In mammals, every somatic cell has two complete sets of chromosomes, whereas the germ cells have only one complete set. The nucleus contains DNA. The DNA is divided into chromosomes, and it contains all the information needed to form an organism. To make Dolly, researchers isolated a somatic cell from an adult female sheep. Next they removed the nucleus and its DNA from an egg cell. Then they transferred the nucleus from the somatic cell to the egg cell. The egg cell, with its new nucleus, was behaving like a freshly fertilized egg. It developed into an embryo, which was implanted into a surrogate mother and carried to term. Dolly, the first mammal to be cloned was an exact genetic replica of the adult female sheep that donated the somatic cell.

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Abstract -Bio -07

Stem Cells

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Stem cells are undifferentiated biological cells that can differentiate into specialized cells and can divide (through mitosis) to produce more stem cells. They are found in multicellular organisms. In mammals, there are two broad types of stem cells: embryonic stem cells, which are isolated from the inner cell mass of blastocysts, and adult stem cells, which are found in various tissues. In adult organisms, stem cells and progenitor cells act as a repair system for the body, replenishing adult tissues. In some organs, such as the gut and bone marrow, stem cells regularly divide to repair and replace worn out or damaged tissues. In other organs, however, such as the pancreas and the heart, stem cells only divide under special conditions. In a developing embryo, stem cells can differentiate into all the specialized cells—ectoderm, endoderm and mesoderm but also maintain the normal turnover of regenerative organs, such as blood, skin, or intestinal tissues. Stem cells can also be taken from umbilical cord blood just after birth. Adult stem cells are frequently used in medical therapies, for example in bone marrow transplantation. Given their unique regenerative abilities, stem cells offer new potentials for treating diseases such as diabetes, and heart disease. However, much work remains to be done in the laboratory and the clinic to understand how to use these cells for cell-based therapies to treat disease, which is also referred to as regenerative or reparative medicine. Scientists discovered ways to derive embryonic stem cells from early mouse embryos nearly 30 years ago, in 1981. Stem cells can now be artificially grown and transformed (differentiated) into specialized cell types with characteristics consistent with cells of various tissues such as muscles or nerves. Embryonic cell lines and autologous embryonic stem cells generated through therapeutic cloning have also been proposed as promising candidates for future therapies. In 2006, researchers made another breakthrough by identifying conditions that would allow some specialized adult cells to be "reprogrammed" genetically to assume a stem cell-like state. This new type of stem cell is called induced pluripotent stem cells (iPSCs). Research on stem cells continues to advance knowledge about how an organism develops from a single cell and how healthy cells replace damaged cells in adult organisms. Stem cell research is one of the most fascinating areas of contemporary biology and it raises scientific questions as rapidly as it generates new discoveries.

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Abstract -Bio -08

Flurosis

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Fluorine is the most abundant element in nature, and about 96% of fluoride in the human body is found in bones and teeth. The principal sources of fluorine were drinking water and food such as sea fish, cheese and tea. The recommended level of fluoride in drinking water in India is 0.5 to 0.8 mg/l. Of the 85 million tons of fluoride deposits on the earth's crust, 12 million are found in India. It has been estimated that the total population consuming drinking water containing elevated levels of fluoride is over 66million.Endemic fluorosis resulting from high fluoride concentration in groundwater is a public health problem in India.World Health Organization (WHO) has set the upper limit of fluoride concentration in drinking water at 1.5mg/l, and The Bureau of Indian Standards, has therefore, laid down Indian standards as 1.0 mg/l as maximum permissible limit of fluoride with further remarks as "lesser the better". Intake of fluoride higher than the optimum level is the main reason for dental and skeletal fluorosis. Dental fluorosis, also called mottling of tooth enamel, is a developmental disturbance of dental enamel caused by excessive exposure to high concentrations of fluoride during tooth development. The risk of fluoride overexposure occurs at any age but it is higher at younger ages. In its mild forms, fluorosis often appears as unnoticeable, tiny white streaks or specks in the enamel of tooth. In its most severe form, tooth appearance is marred by discoloration or brown markings. The enamel may be pitted, rough and hard to clean. The spots and stains left by fluorosis are permanent and may darken over time. Tooth bleaching, microabrasion, and conservative composite restorations or porcelain veneers are commonly used treatments. Skeletal fluorosis is mainly caused by the inhalation of fluoride dusts/fumes by workers in industry, use of coal as an indoor fuel source , consumption of fluoride from drinking water (naturally occurring levels of fluoride in excess of the CDC-recommended safe levels), and consumption of fluoride from the drinking of tea, particularly brick tea. It can also be caused by cryolite (Na_3AlF_6, sodium hexafluoroaluminate). As of now, there are no established treatments for skeletal fluorosis patients. If fluorine intake is stopped, the fluorine existing in bone structures will deplete and be excreted via urine. However, it is a very slow process to eliminate the fluorine from the body completely.

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Abstract -Bio -09

DNA Structure

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Deoxyribonucleic acid (DNA) is a molecule that encodes the genetic instructions used in the development and functioning of all known living organisms and many viruses. DNA is a nucleic acid and is usually a double-helix and has two strands running in opposite directions i.e. they are anti-parallel, one backbone being 3′ (three prime) and the other 5′ (five prime). This refers to the direction the 3rd and 5th carbon on the sugar molecule is facing. The DNA backbone is resistant to cleavage. A significant portion of DNA (98% for humans) is non-coding, meaning that these sections do not serve a function of encoding proteins. Each chain is a polymer of subunits called nucleotides, hence the name polynucleotide. Each strand has a backbone made up of deoxyribose sugar molecules linked together by phosphate groups. The 3' C of a sugar molecule is connected through a phosphate group to the 5' C of the next sugar. This linkage is also called 3'-5' phosphodiester linkage. All DNA strands are read from the 5' to the 3' end where the 5' end terminates in a phosphate group and the 3' end terminates in a sugar molecule. Each sugar molecule is covalently linked to one of 4 possible bases: Adenine, Guanine, Cytosine and Thymine. A and G are double-ringed larger molecules called purines. C and T are single-ringed smaller molecules called pyrimidines. In the double-stranded DNA, the two strands run in opposite directions and the bases pair up such that A always pairs with T and G always pairs with C. The A-T base-pair has 2 hydrogen bonds and the G-C base-pair has 3 hydrogen bonds. The G-C interaction is therefore stronger by about 30% than A-T, and A-T rich regions of DNA are more prone to thermal fluctuations. The bases are oriented perpendicular to the helix axis. The most common DNA structure in solution is the B-DNA. It is not a well-defined conformation but a family of related DNA conformations. They are hydrophobic in the direction perpendicular to the plane of the bases. Under conditions of applied force or twists in the DNA, or under low hydration conditions, it can adopt several helical conformations like, the A-DNA, Z-DNA, S-DNA. The conformation that DNA adopts depends on the hydration level, DNA sequence, the amount and direction of supercoiling, chemical modifications of the bases, the type and concentration of metal ions and polyamines in solution.

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Abstract -Bio -10

Wine as Antioxidant

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An antioxidant is a molecule that inhibits the oxidation of other molecules. Antioxidants in red wine called polyphenols may help protect the lining of blood vessels in your heart. A polyphenol called resveratrol is one substance in red wine that's gotten attention. The other health benefits from drinking wine have been proven to be from poly-phenolic flavonoids, which are better known as antioxidants. These antioxidants are found in grapes that are used in wine. More antioxidants exist in red wines than in white wines because grape skins, which are rich in antioxidants, are included in fermentation in red wines. The antioxidants that are most active in wine are resveratrol, quercetin, and the catechins. These antioxidants neutralize harmful free radicals in your body, which can cause certain types of cancer, heart disease, stroke, immune dysfunction, and degenerative disorders such as dementia and Alzheimer's disease. This is due to its protective redox potential. The antioxidants in red wine may help prevent heart disease by increasing levels of good cholesterol and protecting against artery damage. Harmful free radicals are everywhere in our environment, but mostly caused by exposure to pollution, chemicals, radiation, pesticides, alcohol, unhealthy food, and even sunshine. Medical research has proven that moderate consumption of wine can increase your lifespan. Many of the health benefits from drinking one glass of wine per day, including a reduced risk of cardiovascular disease, are believed to be from the alcohol in wine. Studies show that the consumption of 400 mL/day of red wine for two weeks, significantly increases antioxidant status and decreases oxidative stress in the circulation. The study also showed that when the pancreatic cancer cells were doubly assaulted and pre-treated with the antioxidant, resveratrol, and irradiated, the combination induced a type of cell death called apoptosis, an important goal of cancer therapy. Although red wine consumption during chemotherapy or radiation treatment has not been well studied, it is not contraindicated. In other words, if a patient already drinks red wine moderately, most physicians would not tell the patient to give it up during treatment. Perhaps a better choice, would be to drink as much red or purple grape juice as desired. Some physicians are concerned that antioxidants might end up protecting tumors. Resveratrol not only reaches its intended target, injuring the nexus of malignant cells, but at the same time protects normal tissue from the harmful effects of radiation.

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Abstract -Bio -11

Sickle Cell Anemia

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Sickle-cell disease is one of the most common severe monogenic disorders in the world. Haemoglobinpolymerisation, leading to erythrocyte rigidity and vaso-occlusion, is central to the pathophysiology of this disease, although the importance of chronic anaemia, haemolysis, and vasculopathy has been established. Clinical management is basic and few treatments have a robust evidence base. One of the main problems of sickle-cell disease in children is the development of cerebrovascular disease and cognitive impairment, and the role of blood transfusion and hydroxycarbamide for prevention of these complications is starting to be understood. Recurrent episodes of vaso-occlusion and inflammation result in progressive damage to most organs, including the brain, kidneys, lungs, bones, and cardiovascular system, which becomes apparent with increasing age. Most people with sickle-cell disease live in Africa, where little is known about this disease; however, we do know that the disorder follows a more severe clinical course in Africa than for the rest of the world and that infectious diseases have a role in causing this increased severity of sickle-cell disease. More work is needed to develop effective treatments that specifically target pathophysiological changes and clinical complications of sickle-cell disease.

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Abstract -Bio -12

Nano Technology

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Science is presently undergoing a great evolution, taking humanity to a new era: the era of nanotechnology. Nanotechnology deals with the physical, chemical, and biological properties of structures and their components at nanoscale dimensions. Nanotechnology is based on the concept of creating functional structures by controlling atoms and molecules on a one-by-one basis. Nanotechnology may be able to create many new materials and devices with a vast range of applications, such as in medicine, electronics, biomaterials and energy production. With developments in materials science and biotechnology, nanotechnology is especially anticipated to provide advances in dentistry and innovations in oral health-related diagnostic and therapeutic methods. The application of nanotechnology to dentistry and the time that will be required to implement the results of research into practice are the first questions that arise regarding nanotechnology in dentistry.

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Abstract -Bio -13

Human Genome Project

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The Human Genome Project (HGP) is an international scientific research project with a primary goal to determine the sequence of chemical base pairs which make up human DNA, and to identify and mapping the total genes of the human genome from both a physical and functional standpoint. It remains the worlds largest collaborative biological project. The hereditary material of all multi-cellular organisms is the famous double helix of deoxyribonucleic acid (DNA), which contains all of our genes. DNA, in turn, is made up of four chemical bases, pairs of which form the "rungs" of the twisted, ladder-shaped DNA molecules. All genes are made up of stretches of these four bases, arranged in different ways and in different lengths. The HGP has revealed that there are probably about 20,500 human genes. The completed human sequence can now identify their locations. This ultimate product of the HGP has given the world a resource of detailed information about the structure, organization and function of the complete set of human genes. This information can be thought of as the basic set of inheritable "instructions" for the development and function of a human being. The tools created through the HGP also continue to inform efforts to characterize the entire genomes of several other organisms used extensively in biological research, such as mice, fruit flies and flatworms.

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MICROBIOLOGY
ORAL PRESENTATIONS

Abstract –Micro -01

Quorum Sensing

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Quorum sensing (QS) is a way for individual cells to exchange information using small molecules (SMs) that bind sensory proteins and thus directly or indirectly affect transcription and translation. The binding threshold is assumed to be reached once the growing population, and hence the concentration of the secreted SM, attains a certain level. In the following, I use the term 'QS system' to mean a cell-to-cell communication system in unicellular organisms that functions via the secretion of communication molecules into the environment and their subsequent binding to sensor proteins. Different systems can be distinguished by the different types of communication molecule they use, which are normally also associated with different types of signal synthesis, import and export, reception and response machinery The study of cell-to-cell communication and its effects on transcription in unicellular organisms promises a variety of practical applications. One of them is the possibility of interfering with intercellular communication systems in pathogenic microbes, a process also referred to as quorum quenching. QS involves dedicated cellular systems for the production and detection of communication molecules, sometimes called quormones (quorum sensing pheromones). In bacterial species that employ QS, each cell secretes a basal amount of communication molecules at low cell density. As cell density increases, communication molecule concentration also increases, provided that the cells are not too far apart. Communication molecules bind to special receptors once their concentration exceeds a certain threshold. This in turn produces the physiological response. In bacteria, QS regulated phenotypes include bioluminescence, exopolysaccharide production, virulence, conjugal plasmid transfer, antibiotic and exoenzyme production, biofilm formation, and growth inhibition). Types of communication molecules discussed in this section are acyl homoserine lactones (AHLs), AI-2 molecules, and modified oligopeptides (table 3-2). AHLs mostly affect transcription via a one-component signal transduction system, where the protein domain that binds the SMs is fused to a DNA binding domain. Peptide communication molecules and AI-2, on the other hand, often affect transcription via two-component signal transduction systems composed of a histidine kinase and a response regulator protein). Although the nature of the chemical signals, the signal relay mechanisms, and the target genes Presumably, this process bestows upon bacteria some of the qualities of higher organisms. The evolution of quorum sensing systems in bacteria could, therefore, have been one of the early steps in the development of multicellularity.

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Abstract–Micro -02

SPIROCHETES IN ORAL CAVITY

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Spirochaetes are thin delicate spiral shaped bacteria. There are more saprophytic species than pathogens. Some of them are included in the normal flora. They are anaerobic and opportunistic pathogens. Among the anaerobic oral spirochetes, the species T. denticola can be cultivated in the laboratory and is studied not only in its own right as an oral pathogen but also as a relative of the syphilis spirochete and representative of other oral spirochetes They need a predisposing factor that facilitate its growth in the oral cavity. Oral spirochaetes, which are small, medium or large sized, include species of the genus Treponema, many of which have not yet been cultured. They are found in root canal infections, pericoronitis, gingivitis and periodontitis, constituting up to 10% of the flora in endodontic abscesses, 30% in acute necrotizing ulcerative gingivitis, and 56% in advanced marginal periodontitis. Treponema vincenti in association with fusobacterium fusiformi produces a condition called as vincents angina. It results after a tooth extraction or after an abscess forming lesion or trauma. Periodontal disease encompasses a range of inflammatory infections that affect the human gingiva and underlying tissues that support the tooth. Periodontal disease, as typified by periodontitis, has a varied and highly complex polymicrobial etiology. Oral Treponema, as the only genus of spirochetes identified in the oral cavity, is one of the bacterial groups which have been found associated with the occurrence and severity of periodontal infections. Oral treponeme population has been demonstrated as a complex and diversified community. This study mainly investigated and compared the composition of treponeme and related bacterial populations present in the subgingival plaques. It is evident that the subgingival plaque sampled from periodontitis subjects contained a significantly higher diversity and clonal abundance of oral treponeme.

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Abstract–Micro -03

ORAL MICROBES IN THE CAUSATION OF CARDIOVASCULAR DISEASE

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Cardiovascular disease (CVD) refers to diseases of the circulatory system, including outcomes such as myocardial infarction and stroke. The underlying cause of CVD in the majority of cases is atherosclerosis. While great advances have been made in the treatment of CVD, the prevalence of the disease continues to rise. Up to 50% of individuals with CVD do not have any of the traditional CV-risk factors such as hypercholesterolemia, hypertension, smoking, and obesity , indicating that other factors must contribute to the disease. Identification of other risk factors for CVD, along with their mechanisms of action, is essential if morbidity and mortality from the disease are to be reduced.The roles of infection and inflammation in atherosclerosis have become increasingly apparent. Chronic inflammatory periodontal diseases are among the most common human infections with 10–15% of the population experiencing advanced forms of the disease . In the context of CVD, individuals with periodontitis are reported to have an increased risk of developing the disease, including coronary artery disease, stroke, myocardial infarction, and atherosclerosis even after adjusting for classical CV-risk factors . Furthermore, adjusted analysis showed that the bacterial burden of*Porphyromonas gingivalis*, *Actinobacillus actinomycetemcomitans*, *Treponema denticola*, and *Tannerella forsythia* in subgingival plaque samples was associated with carotid intima-media thickening.

While many studies have shown an association between periodontal disease and CVD, some studies have shown a weak or no association between the two diseases. The fact that periodontitis and CVD share common risk factors also makes interpretation of the clinical studies complex. Meta-analyses have been conducted, however, and a small but significant association has been demonstrated . The atherosclerotic susceptible apolipoprotein E deficient (apoE −/−) mouse model has provided further support for the role of oral bacteria in atherosclerosis by demonstrating that inoculation with *P. gingivalis* results in advanced atherosclerotic lesions compared with control mice. Over the decades our understanding of the pathogenesis of CVD has increased, and infections, including those caused by oral bacteria, are more likely involved in CVD progression than previously thought. The interactions between oral bacteria and CVD are extremely complex and it's highly likely that more than one mechanism is involved. The purpose of this review is to evaluate various oral microbes in the causation of

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cardiovascular diseases.

Abstract–Micro -04

MICROBIOLOGY OF DENTAL CARIES

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Dental caries is a multifactorial, chronic bacterial disease, that causes demineralization and destruction of the hard tissues, usually by production of acid by bacterial fermentation of the food debris accumulated on the tooth surface..Dental caries, otherwise known as tooth decay, is one of the most prevalent chronic diseases of people worldwide; individuals are susceptible to this disease throughout their lifetime. Dental caries forms through a complex interaction over time between acid-producing bacteria and fermentable carbohydrate, and many host factors including teeth and saliva. Dental caries is one of the most prevalent chronic diseases of people worldwide. The disease process may involve enamel, dentin and cement, causing decalcification of these tissues and disintegration of the organic substances The microbial flora of the mouth is highly complex, containing a wide variety of bacterial species. The most common types of oral disease, dental caries and periodontal disease, are both related to dental plaque and seem to occur when the normal balance between the microorganisms and the host is disturbed in some way. Dental caries is usually associated with increased numbers of mutans streptococci and lactobacilli at the sites of disease; estimation of salivary levels of these organisms may be useful for assessing caries risk in patients and for monitoring their response to preventive measures. A large number of 'candidate pathogens' have been identified as potential aetiological agents in different types of periodontal disease, although the 'specific plaque hypothesis' may still be controversial. Porphyromonas gingivalis, Actinobacillus actinomycetemcomitans, together with the poorly understood spirochaetes, have most frequently been reported as significant periodontopathogens and a number of possible virulence factors have been described. Application of modern molecular techniques to the study of the microbiology of oral diseases should allow rapid further progress to be made and will lead, hopefully, to improved methods of diagnosis, risk assessment and treatment.

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Abstract–Micro -05

ORAL MANIFESTATION OF SYSTEMIC DISEASE.

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Oral manifestations of systemic diseases are potential indicators of an array of conditions. Truly the oral cavity is a mirror that reflects and unravels many of the human body's internal secrets. Some of these manifestations are disease specific and help raise a high degree of suspicion for the alert clinician. Because oral manifestations may accompany many systemic diseases, it is essential that these are appropriately recognized to provide correct diagnosis and referral for treatment and patient care. Multiple entities involving the various areas of the oral cavity like the soft palate, hard palate, tongue, gingiva, oral mucosa, the dentition, periodontium, and the salivary gland tissue have been enlisted. Although this article is not all-inclusive, the authors highlight lesions or conditions that are directly related to or are caused by some of the more common systemic diseases, and hope to provide ample insight for physicians, dentists, and clinicians in otolaryngologic practice. In this paper representation we discuss about the oral manifestation of systemic disease. The oral cavity is the site of much infectious and inflammatory disease which has been associated with systemic diseases such as diabetes, cardiovascular disease and pre-term low births. The possible systemic diseases which arise from oral microorganisms are hereby focused. Oral manifestations of systemic diseases are potential indicators of an array of conditions. Truly the oral cavity is a mirror that reflects and unravels many of the human body's internal secrets. Some of these manifestations are disease specific and help raise a high degree of suspicion for the alert clinician. Because oral manifestations may accompany many systemic diseases, it is essential that these are appropriately recognised to provide correct diagnosis and referral for treatment and patient care. Multiple entities involving the various areas of the oral cavity like the soft palate, hard palate, tongue, gingiva, oral mucosa, the dentition, periodontist, and the salivary gland tissue have been enlisted. Although this article is not all-inclusive, the authors highlight lesions or conditions that are directly related to or are caused by some of the more common systemic diseases, and hope to provide ample insight for physicians, dentists, and clinicians in otolaryngology practice.

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Abstract–Micro -06

EXTENDED SPECTRUM BETA LACTAMASE

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Extended-Spectrum Beta-Lactamases (ESBLs) are enzymes that can be produced by bacteria making them resistant to cephalosporins, which are the most widely used antibiotics in many hospitals. In the mid-1980s, a new group of enzymes, the extended-spectrum b-lactamases (ESBLs), was detected. ESBLs are beta-lactamases that hydrolyze extended-spectrum cephalosporins with an oxyimino side chain. These cephalosporins include cefotaxime, ceftriaxone, and ceftazidime, as well as the oxyimino-monobactam aztreonam. Thus ESBLs confer resistance to these antibiotics and related oxyimino-beta lactams. This extends the spectrum of β-lactam antibiotics susceptible to hydrolysis by these enzymes. Typically, they derive from genes for TEM-1, TEM-2, or SHV-1 by mutations that alter the amino acid configuration around the active site of these β-lactamases. This extends the spectrum of β-lactam antibiotics susceptible to hydrolysis by these enzymes. An increasing number of ESBLs not of TEM or SHV lineage have recently been described. The presence of ESBLs carries tremendous clinical significance. The ESBLs are frequently plasmid encoded. Plasmids responsible for ESBL production frequently carry genes encoding resistance to other drug classes (for example, aminoglycosides). Therefore, antibiotic options in the treatment of ESBL-producing organisms are extremely limited. Carbapenems are the treatment of choice for serious infections due to ESBL-producing organisms, yet carbapenem-resistant isolates have recently been reported. ESBL-producing organisms may appear susceptible to some extended-spectrum cephalosporins. However, treatment with such antibiotics has been associated with high failure rates. There is substantial debate as to the optimal method to prevent this occurrence. It has been proposed that cephalosporin breakpoints for the *Enterobacteriaceae* should be altered so that the need for ESBL detection would be obviated. In common to all ESBL detection methods is the general principle that the activity of extended-spectrum cephalosporins against ESBL-producing organisms will be enhanced by the presence of clavulanic acid. ESBLs represent an impressive example of the ability of gram-negative bacteria to develop new antibiotic resistance mechanisms in the face of the introduction of new antimicrobial agents. Therefore, antibiotic options in the treatment of ESBL-producing organisms are extremely limited. Carbapenems are the treatment of choice for serious infections due to ESBL-producing organisms, yet carbapenem-resistant isolates have recently been reported. ESBL-producing organisms may appear susceptible to some extended-spectrum cephalosporins. However, treatment with such antibiotics has been associated with high failure rates.

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Abstract–Micro -07

MELIOIDOSIS

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Melioidosis (also referred to as Whitmore's disease) and glanders are related zoonotic diseases, caused by Gram negative rods, Burkholderia pseudomallei and Burkholderia mallei respectively. Itis a fascinating disease, with a distinct geography, a wide range of clinical presentations and a complex pathogenesis. These factors all contribute to the public health challenge it presents in this regionThe clinical presentation of melioidosis varies from a rapidly fatal, septicaemic illness without pneumonia, to focal abscess-forming infection and asymptomatic exposure leading to seroconversion . The septicaemic illness is unusual because it can recur after several days or even weeks of apparently adequate intravenous antibiotic treatment. This feature of septicaemic melioidosis has prompted recommendations for follow-on eradication treatment for several months. Another unusual feature of septicaemic melioidosis is that it can occur a long time after the initial exposure . This is thought to have its origins in a dormant subclinical infection. Other forms of severe infection includ pneumonia that does not respond to conventional antibiotic therapy, and central nervous system infection which has a high mortality rate. Even in centres familiar with the infection, the mortality rate is high for these forms of melioidosis.The subacute infections are usually focal and may affect almost any organ system. They can also act as a source for subsequent bacteraemia . Subclinical infection has been inferred from the incidental finding of positive melioidosis serology in apparently healthy adults. In some locations where overt infection is relatively common, seropositivity rates may be high. The lifelong risk of dormant infection progressing to late onset septicaemic disease is unknown, but presumed to be low. Little has been done to match melioidosis seroprevalance with exposure and subsequent infection. Disease manifestations are protean, and no inexpensive, practical, and accurate rapid diagnostic tests are commercially available; diagnosis relies on culture of the organism. Despite the introduction of ceftazidime- and carbapenem-based intravenous treatments, melioidosis is still associated with a significant mortality attributable to severe sepsis and its complications. A long course of oral eradication therapy is required to prevent relapse. Studies exploring the role of preventative measures, earlier clinical identification, and better management of severe sepsis are required to reduce the burden of this disease. No currently available vaccination at the present time, the Health Protection Agency (HPA) thinks it unlikely that either organism is available in a weaponised form.Nevertheless, they have produced guidelines for such a release.

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Abstract –Micro -08

BIOFILMS IN DENTURE

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Candidal colonization and subsequent biofilm formation on denture materials are important in the development of pathogenesis, such as denture stomatitis. Routine use of denture cleansers is one of the most effective methods of denture plaque control, although the incompatibility of soft liners and denture cleansers cause damage to the materials. The present study, biofilm formation of Candida albicans on the surfaces of soft denture lining materials, immersed in denture cleansers for 180 days were studied. Seven commercially available soft denture lining materials, were artificially deteriorated by immersion into three commercially available denture cleansers for 180 days, and subsequent fungal growth and biofilm formation were studied by measuring pH of the media and by the use of adenosine triphosphate (ATP) analysis. Fungal biofilm formation on the deteriorated soft liners varied depending upon the combination of the soft liners and denture cleansers. Several combinations of soft liners with denture cleansers exhibited the significantly high colonization capacity as compared with each sample immersed in distilled water, used as individual controls. The relationship between the biofilm formation on the samples of each material and the surface roughness of the soft lining materials was analyzed. However, no significant correlation was observed. The results, taken together, suggested that fungal colonization could be predominantly regulated by the combination of lining material with denture cleansers. In clinical terms, our findings suggests that daily cleansing of soft lining materials with mismatched denture cleansers promoted the subsequent biofilm formation of fungi on the materials.

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Abstract–Micro -09

DRUG TARGET IN HIV AND THEIR RESISTANCE

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In this paper we discuss about drug target in HIV and their resistance. Significant number of human immunodeficiency virus (HIV) infections have become resistant to antiretroviral treatment, which means that there is a paramount need for novel drug targets to defeat the virus. Until recently, all HIV drugs inhibited HIV replication by mechanisms operating inside infected cells. In contrast, new antiretroviral drugs operate outside infected cells. Their mechanism of action consists in inhibiting entry of the virus into cells, thereby halting the very first step of HIV replication. Examples of this new class of drugs include entry inhibitors, co-receptor antagonists, and fusion inhibitors. In addition to their novel mechanism of action, this new class of drugs also has potential action against drug-resistant HIV strains, causes minimal adverse effects, and may be administered in a simplified, once-daily dosing regimen. New classes of anti-HIV drugs—and new drugs in existing classes—represent the best hope for people infected with HIV, especially those who have exhausted current therapies. The drugs currently used to treat HIV type 1 (HIV-1) infection belong to four distinct classes: nucleoside and nucleotide analogues, which act as DNA-chain terminators and inhibit reverse transcription of the viral RNA genome into DNA, a crucial event occurring at an early stage of the viral life cycle; nonnucleoside reverse-transcriptase inhibitors, which bind and inhibit reverse transcriptase, the viral enzyme that conducts reverse transcription; protease inhibitors, which target the viral protease, the enzyme required for the cleavage of precursor proteins (gag and gag–pol), permitting the final assembly of the inner core of viral particles; and entry inhibitors, which block the penetration of HIV virions into their target cells. Combinations of antiretroviral drugs are now used for the treatment of HIV infection — so-called highly active antiretroviral therapy (HAART). Current HAART regimens generally comprise three antiretroviral drugs, usually two nucleoside analogues and either a protease inhibitor or a nonnucleoside reverse-transcriptase inhibitor. The use of agents from different classes is instrumental in controlling the development of resistance, but whereas some drug combinations have been shown to be antagonistic, there is no evidence that any combinations of currently available drugs are strongly synergistic in vitro.

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Abstract –Micro -10

TRANSPLANTATION IMMUNOLOGY

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This chapter focuses on how a transplanted organ is recognized by the recipient's immune system and how an allograft is rejected. It is important to understand fundamentals of immunology in order to better apply immunosuppressive strategies. Understanding how the recipient immune system recognizes the donor organ willalso make it apparent to the reader that there are "holes" in our current immunosuppressive therapy. Many basic science laboratories are working to fill the "holes" and new immunosuppressive approaches are likely to be available in the future Transplantation can be a potent modality for the treatment of end-stage organ failure. However, the recipient's immune system will recognize and respond to foreign antigens on grafts, which include both Major Histocompatibility Complex (MHC) and minor histocompatibility (mH) antigens, leading to graft rejection. To prevent graft rejection, most transplant recipients are put on a life-long, combined immunosuppressive drug/steroid therapy. Despite the side effects and toxicity, this treatment is not effective to prevent chronic graft rejection. Furthermore, since immunosuppressive drugs non-specifically inhibit the immune system, recipients have a higher incidence of infections and malignancy. Currently, a major goal of transplantation is to induce unresponsiveness or tolerance in recipients specifically to donor antigens expressed on grafts while maintaining a healthy and intact immune system against third-party antigens, such as viruses. Based on the immune mechanisms leading to graft rejection, many strategies have been developed for tolerance induction and been shown effective in animal models. These strategies include preventing the activation of anti-graft T cells by blocking costimulatory molecules, eliminating activated anti-graft T cells. More recent studies also suggest a role for regulatory T cells in the induction of transplantation tolerance. The goal of tolerance is the holy grail of transplantation. Tolerance is strictly defined as immunologic unresponsiveness to a particular antigen, while retaining the ability to respond to another antigen. Immunologic tolerance is demonstrated by immunologic unresponsiveness to a transplanted organ of one donor, followed by adequate immunologic responses to a second genetically unrelated donor. Usually the test of "true tolerance" involves transplantation of second graft from the original donor and a third-party graft onto the recipient to demonstrate that the second graft is not rejected, while the third-party graft is rejected

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Abstract –Micro -11

USES OF GENETICALLY ENGINEERED MICROBES

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Scientists can now identify genes that influence desirable physical features in one organism and transfer them into others. Such genetic engineering results in altered (or recombinant) organisms having a combination of desired traits. Using genetically modified living organisms or their products for commercial purposes is an emerging area in biotechnology. In the Microbial Genome Program, scientists are altering the genome of the bacterium *Deinococcus radiodurans* to increase its potential usefulness in cleaning up toxic-waste sites around the globe. Studies have revealed that the microbe's extraordinary DNA-repair processes enable it to thrive in high-radiation environments. Through the use of biotechnological processes, scientists hope to add genes from other organisms that will confer the ability to degrade toxic chemicals such as toluene, commonly found in mixed, chemical, and radiation waste sites. Other examples of current and potential applications of genetic engineering follow. Production of pharmaceuticals by bacteria that produce human insulin for diabetics or human growth hormone for individuals with dwarfism. Scientists are perfecting ways to transfer human genes for important proteins into cows, sheep, and goats to obtain medically significant products from the milk of these animals.Development of diagnostics to detect disease-causing organisms and monitor the safety of food and water supplies. Investigators also are developing systems for identifying pathogens that may someday be used as biological weapons by rogue nations or even terrorist groups.Use of bacteria as living sensors (biosensors) of particular chemicals in soil, air, and water. In some studies, bacteria have been genetically altered to emit a green fluorescent protein visible in ultraviolet light when they metabolize the explosive TNT leaking from land mines. Researchers envision a day when bacteria can be applied to a tract of land with a crop duster and then analyzed from a helicopter.

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MICROBIOLOGY
POSTER PRESENTATIONS

Abstract –Micro -01

ELECTROLYZING WATER

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A variety of bacteria are present in infected root canals. For that reason, mechanical enlargement and chemical disinfection of the root canal system are performed. Various agents are used to irrigate and disinfect root canals. Sodium hypochlorite, ethylene diamine tetra acetic acid, and the like have been used as irrigants. These solutions have bactericidal effects. In addition, it was found the smear layer to be removed by irrigation with both solutions in alternation. Recently, electrolyzed water has been used in Japan to disinfect produce for the sake of preventing food poisoning. Electrolyzed water has a strong and immediate bactericidal effect data suggest that electrolyzed water, combined with tap water and salt, is safe for human consumption. In addition, electrolyzed water does not produce allergic responses in humans. The active factors responsible for the bactericidal effect of electrolyzed water are chlorine-related substances, such as chlorine (Cl2), hypochlorous acid (HCIO), and hypochlorous acidic ion (ClO–).The bactericidal effect of the chlorine-related substances is stronger with nondissociated HCIO than with dissociated CIO–. In electrolyzed neutral water (ENW), Cl2, having the strongest bactericidal effect, dissolves poorly, whereas HCIO dissolves easily. In medical facilities, electrolyzed water has been used as a disinfectant for hands and as a cleaning agent for surfaces such as floors and beds for the prevention of opportunistic infection. Recently, electrolyzed water has been used in dentistry for disinfection of dental instruments, root canal irrigation, irrigation of the gingival pocket, and gargles.

There are several reports on the bactericidal effect of superoxidized water (SOW), which is one type of electrolyzed water. However, few reports on ENW have appeared until now. SOW, which is strongly acidic, is produced by electrolysis of tap water containing a small quantity of NaCl. SOW and ENW have both been used as disinfectants for hands and as cleaning agents for floors and beds in Japan. The active factors responsible for the bactericidal effect in both types of water are chlorine-related substances, such as chlorine (Cl2), hypochlorous acid (HClO), and hypochlorous acidic ion (C10–)

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PATHOLOGY

ORAL PRESENTATIONS

Abstract –Path-01

Radicular Cyst

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Radicular cyst is defined as an odontogenic cyst of Inflammatory origin that is preceded by a chronic resulting in the formation of a cyst that may be infected or sterile (The epithelium undergoes necrosis and the granuloma becomes a cyst). These lesions can grow into large lesions because they apply pressure over the bone causing resorption . The toxins released by the breakdown of granulation tissue is one of the common causes of bone resorption. These cysts are not true neoplasms. Treatment - Endodontic Treatment - Peripheral lesions including radicular cysts are eliminated by body once the causative agents are removed. Majority of radicular cysts can undergo resolutions following Root Canal Treatment & don't require surgical intervenation. It is suggested that insertion of file or other root canal instrument beyond the apical foramen (for 1-2mm) produces transitory acute inflammation which may destroy epithelial lining of radicular cyst and convert it into granuloma. Thus, leading to its resolutions. Surgical Treatment - Enucleation- The affected tooth is extracted or preserved by root canal treatment with apicocetomy. A mucoperiosteal flap over cyst is raised and a window is opened in the bone to give adequate access. The cyst is carefully separated from its bony wall. The entire cyst is removed intact. the edges of bony cavity are smoothened off, free bleeding is controlled and cavity is irrigated to remove debris. Mucoperiosteal flap is replaced back and sutured in place. Marsupialisation- The cyst is opened essentially as for enucleation but the epithelial lining is sutured to mucous membrane at margins of opening. The aim is to produce a self-cleansing cavity, which becomes an invagination of oral tissues. The cavity is initially packed with ribbon gauze and after margins are healed a plug or extension of denture is made to close the openings. The cavity usually closes by regrowth of surrounding tissues and restoration of normal contour of that part. However, there are always chances of closing the orifice and reformation of cyst. The main application is for temporary decompression of exceptionally large cyst where fracture of jaw is a risk factor. When enough new bone is formed, cyst can be enucleated.

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Abstract –Path-02

Growth Factors In Wound Healing

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Wound healing, as a normal biological process in the human body, is achieved through four precisely and highly programmed phases: hemostasis, inflammation, proliferation, and remodeling. For a wound to heal successfully, all four phases must occur in the proper sequence and time frame. Many factors can interfere with one or more phases of this process, thus causing improper or impaired wound healing. This article reviews the recent literature on the most significant factors that affect cutaneous wound healing and the potential cellular and/or molecular mechanisms involved. The factors discussed include oxygenation, infection, age and sex hormones, stress, diabetes, obesity, medications, alcoholism, smoking, and nutrition. A better understanding of the influence of these factors on repair may lead to therapeutics that improve wound healing and resolve impaired wounds. Wound healing is a complex biological process which requires cellular interactions between a variety of cells like fibroblasts, myofibroblasts, smooth muscle cells, endothelial cells, keratinocytes and immune cells. These interactions are mediated by numerous growth factors namely epidermal growth factor (EGF), fibroblast growth factor (FGF), insulin-like growth factor (IGF), keratinocyte growth factor (KGF), platelet-derived growth factor (PDGF), transforming growth factor (TGF) and vascular endothelial growth factor (VEGF). Growth factors are hormone -like molecules that interact with specific cell surface receptors to control the process of tissue repair .even trace quantities of these growth factors exert a powerful influence in the wound healing process. By the third day tissue macrophages migrate into the wound and serve as the principal cell, controlling and regulating wound healing. These macrophages control wound healing through the production of growth factors such as platelet-derived growth factor (PDGF), transforming growth factor (TGF), interleukin (IL), and tumor necrosis factor (TNF). The phase of wound healing called fibroplasia begins as the number of macrophages and fibroblasts increase in number which enables the process of matrix formation and collagen synthesis Therefore growth factors play fundamental roles in wound healing process by stimulating chemotaxis and cellular proliferation , by providing signaling among cells of the same and different type, by controlling extracellular matrix formation and angiogenesis, by regulating the process of contraction and by re-establishing tissue integrity.

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Abstract -Path-03

Gangrene

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Gangrene occurs when tissue dies (necrosis) because its blood supply is interrupted. Gangrene may be caused by an infection, injury, or a complication of a long-term condition that restricts blood circulation. It most commonly occurs in the extremities - the toes, fingers, arms and legs - but internal organs and muscles may also become gangrenous. There are five main types of gangrene: 1. Dry gangrene. 2. Wet gangrene. 3. Gas gangrene. 4. Internal gangrene. 5. Fournier's gangrene. Our cells require nutrients and oxygen to survive and they get this from our blood. If their blood supply goes down below a certain level, the cells will become damaged and will eventually die. Tissues and cells are also attacked by organisms such as bacteria, viruses, parasites and fungi. Our white blood cells and the Thymus cells (T-cells) form part of our immune system and fight germs. If the blood supply is cut there will be no white cells or T-cells to stop the organisms from multiplying and causing an infection. Risk factors for gangrene are age, diabetes, vascular diseases, injury or surgery, weakened immune system and smoking. Generally, dry gangrene develops slowly. It is the most common gangrene for patients with atherosclerosis and other vascular diseases. Symptoms of dry gangrene - A red line appears on the skin which surrounds the affected tissue. The area will gradually become numb and cold . When necrosis (tissue death) occurs there may be some pain. Some patients, especially older ones, may feel nothing at all. The area will change from red, to brown, to black. The necrotized tissue then shrivels up and eventually falls off. Wet gangrene is much more painful than dry gangrene. The term 'wet' is used to refer to a bacterial infection in the affected tissue. It can develop as a result of an injury, a severe burn, or frostbite. This type of gangrene is common with diabetes patients who unwittingly injure a toe or foot. As it spreads rapidly and can be fatal it needs to be treated urgently.The affected area swells before any tissue dies.The skin will change color from red, to brown, to black.There will be pus and a foul smell with fever (temperature). Gas gangrene - Usually deep muscle tissue is affected. The surface of the skin may appear normal, but as the condition advances the skin may become pale, and then turn grey or purplish-red. Gas gangrene is usually caused by Clostridium perfringens bacteria. The bacteria multiply when the blood supply is depleted. The bacterial infection produces toxins that release a gas. Gas gangrene can become life-threatening. The affected area feels heavy and painful. The pain is caused by the infection which produces a gas. The skin may appear to bubble. A crackling sound when area is pressed. This sound is caused by the gas. Sometimes there may be a watery discharge which does not usually have a foul smell.

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Abstract –Path-04

Giant Cell Lesions In Head And Neck

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Peripheral giant-cell granuloma - (PGCG) is an oral pathologic condition that appears in the mouth as an overgrowth of tissue due to irritation ortrauma. Because of its overwhelming incidence on the gingiva, the condition is associated with two other diseases, though not because they occur together. Instead, the three are associated with each other because they appear frequently on gingiva: pyogenic granuloma and peripheral ossifying fibroma. Because of its similar microscopic appearance to the bony lesions called central giant-cell granulomas, peripheral giant-cell granulomas are considered by some researchers to be a soft tissue equivalent. The appearance of peripheral giant-cell granulomas is similar to pyogenic granulomas. The color ranges from red to bluish-purple, but is usually more blue in comparison to pyogenic granulomas. It can be sessile or pedunculated with the size usually being less than 2 cm. There is a gender difference with 60% of the disease occurring in females. The prevalence of peripheral giant-cell granulomas is highest around 50 - 60 years of age. It appears only on the gingiva or on an edentulous (without teeth) alveolar ridge. It is more often found in the mandible rather than the maxilla but can be found in either anterior or posterior areas. The underlying alveolar bone can be destroyed, leaving a unique appearance referred to as "cupping resorption" or "saucerization". Central giant cell granuloma - Central giant-cell granuloma (CGCG) . There are two types of CGCG's, non-aggressive and aggressive. The former has a slow rate of growth and thus less likely to absorb roots and perforate the cortical plate. The aggressive form has rapid growth and thus is much more likely to absorb roots and perforate the cortical plate. It also has a high rate for recurrence and can be painful and cause paresthesia. Giant cell tumour or osteoclastoma - is a relatively uncommon tumor of the bone. It is characterized by the presence of multinucleated giant cells(osteoclast-like cells). Malignancy in giant cell tumor is uncommon and occurs in approximately 2% of all cases. However, if malignant degeneration does occur it is likely to metastasize to the lungs. Giant cell tumors are normally benign, with unpredictable behavior. It is a heterogeneous tumor composed of three different cell populations. The giant-cell tumour stromal cells (GCTSC) constitute the neoplastic cells, which are from an osteoblastic origin and are classified based on expression of osteoblast cell markers such as alkaline phosphatase and ostocalsin. In contrast, the mononuclear histiocytic cells (MNHC) and multinucleated giant cell (MNGC) fractions are secondarily recruited and comprise the non-neoplastic cell population. They are derived from an osteoclast-monocyte lineage determined primarily by expression of CD68, a marker for monocytic precursor cells. In most patients, the tumors are slow to develop, but may recur locally in as many as 50% of cases.

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Abstract –Path-05

Immunofluorescence In Dentistry

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Immunofluorescence is a technique used for light microscopy with a fluorescence microscope and is used primarily on microbiological samples. This technique uses the specificity of antibodies to their antigen to target fluorescent dyes to specific biomolecule targets within a cell, and therefore allows visualisation of the distribution of the target molecule through the sample. Immunofluorescence is a widely used example of immunostaining and is a specific example of immunohistochemistry that makes use of fluorophores to visualise the location of the antibodies. Immunofluorescence can be used on tissue sections, cultured cell lines, or individual cells, and may be used to analyse the distribution of proteins, glycans, and small biological and non-biological molecules. Immunofluoresence can be used in combination with other, non-antibody methods of fluorescent staining, for example, use of DAPI to label DNA. Several microscope designs can be used for analysis of immunofluorescence samples; the simplest is the epifluorescence microscope, and theconfocal microscope is also widely used. Various super-resolution microscope designs that are capable of much higher resolution can also be used. CD34 is considered a pan-endothelial cell marker for paraffin-embedded sections. Immunofluorescence technique revealed homogenous staining pattern with capillaries and larger vessels showing complete and strong membrane staining reflecting the high capacity of the pulp for regeneration and response to different stimuli. By this technique the dense capillary plexus of the sub-odontoblastic region, which is responsible for the reaction of the tissue to any physical or chemical stimuli or pathological condition, can be clearly identified, while immunohistochemistry did not reveal such a detailed staining pattern.

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Abstract –Path-06

Role Of Platelets In Health And Disease

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Platelets, or thrombocytes , are small, disk shaped clear cell fragments , 2–3 µm in diameter, which are derived from fragmentation of precursor megakaryocytes. The average lifespan of a platelet is normally just 5 to 9 days. Platelets are a natural source of growth factors. They circulate in the blood of mammals and are involved in hemostasis, leading to the formation of blood clots. If the number of platelets is too low, excessive bleeding can occur. High platelet blood clots can form (thrombosis), which may obstruct blood vessels and result in such events as a stroke, myocardial infarction, the other functions include Clot retraction, Procoagulant ,Inflammation ,Cytokine signalling and Phagocytosis. Platelets have essential roles in both health and disease. Normal platelet function is required for hemostasis In some states, the platelets, while being adequate in number, are dysfunctional. For instance, aspirin irreversibly disrupts platelet function by inhibiting cyclooxygenase-1 and hence normal hemostasis. The resulting platelets are unable to produce new cyclooxygenase because they have no DNA. Normal platelet function will not return until the use of aspirin has ceased and enough of the affected platelets have been replaced by new ones, which can take over a week. While Ibuprofen, an NSAID, does not have such a long duration effect, with platelet function usually returning within 24 hours and Uremia, a consequence of renal failure, leads to platelet dysfunction that may be ameliorated by the administration of desmopressin. Inhibition of platelet function in disease or by pharmacological treatment results in bleeding disorders. Calcium is a major second messenger in platelet activation. Elevated intracellular calcium leads to hyperactive platelets. Elevated platelet calcium has been documented in hypertension and diabetes, both conditions increase the likelihood of heart attack and stroke. Thus, proper regulation of calcium metabolism in the platelet is extremely important. Using medications carefully can reduce the risk of drug-related acquired platelet function defects.

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Abstract –Path-07

Approach To Bleeding Disorders

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Bleeding disorders are classified as disorders of primary hemostasis (platelet or vascular disorders) or disorders of secondary hemostasis (coagulation protein disorders). Differentiation is an essential step in the diagnostic workup. Emergency Approach to the bleeding Patient is essential.Bleeding disorders should always be considered life threatening. Even the stable patient with a bleeding disorder can decompensate rapidly from massive bleeding or bleeding into a vital organ. Rapid diagnosis is paramount, such that rational therapy can be instituted with minimal delay.The patient may be presented for bleeding that is evident to the owner. It may also present for symptoms related to anemia from ongoing hemorrhage, or symptoms due to acute bleeding that compromises organ function or hemodynamics. Patients in an anemic crisis are depressed or moribund, with marked pallor, tachypnea, tachycardia, and bounding pulses. If bleeding has been gradual and there has been sufficient time for compensatory fluid shifts, the patient may be weak but hemodynamically stable. If anemia is due to substantial acute blood loss, symptoms of hypoperfusion predominate. Hemorrhage into the brain, spinal cord, myocardium, or lungs can result in acute organ compromise without significant anemia or shock. A primary survey should be performed in any emergency patient. This is the initial rapid assessment of vital organ systems to determine if a life-threatening situation exists. Hypovolemic shock, anemic crisis, and pulmonary or brain hemorrhage constitute life-threatening situations in the bleeding patient. Venous access should be established without delay and blood collected from the catheter for a minimum database, including a packed cell volume (PCV) and total protein (TP) concentration. In the bleeding animal, both PCV and TP are usually decreased. In acute hemorrhage, however, the PCV may be normal or elevated as a result of compensatory splenic contraction. A low TP value in a hypovolemic patient is a good clue to acute blood loss, regardless of the PCV. Additional blood samples should be collected before initiating therapy, to avoid treatment-induced changes in laboratory parameters. These should include a blood smear, serum, and EDTA and citrated plasma samples. A blood smear should be examined, with particular emphasis on: platelet numbers, platelet morphology, and the presence of schizocytes. Depending on the findings in the individual patient, additional testing may include: a CBC, chemistry profile, screening coagulation tests, immune testing, and/or serology.

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Abstract –Path-08

Recent Methods In Diagnosis Of Cancer

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Malignant transformation of cells into cancer arises due to long term accumulation of genetic and epigenetic events. Early diagnosis of these transformations in cells can improve the prognosis of cancer cases. Cancer screening and surveillance methods include ultrasound, mammography, digital mammography, magnetic resonance imaging, computed tomography, positron emission tomography and magnetic resonance spectroscopy. Other techniques such as immunohistochemistry, in situ hybridization (FISH, CSH), PCR, RT-PCR (real time- PCR), flow cytometry and microarray are used nowadays for diagnosis. Microarray technology is a new and efficient approach to extract data of biomedical relevance for a wide range of applications. In cancer research, it will provide high-throughput and valuable insights into differences in an individual's tumor as compared with constitutional DNA, mRNA expression, and protein expression and activity. This review highlights the recent developments in cancer diagnostic technologies and describes the eventual use of these technologies for clinical and research applications. Tumor markers are biologic or biochemical substances produced by tumors and secreted into body fluids or present on body tissues in higher than normal amounts. Gold et al., isolated a glycoprotein molecule from specimens of human colonic cancer and thus discovered the first "tumor antigen", later identified as carcino-embryonic antigen (CEA). Today there are literally hundreds of tumor markers, although their clinical utility is under investigation. Tumor markers can be detected by various methods including antigen-antibody based techniques (ELISA – enzyme linked immunosorbant assay, radio-immunoassay, precipitin tests, flow-cytometry, immunohistochemistry, immunoscintigraphy) and molecular genetic methods. Measurement of tumor markers levels, when used along with other diagnostic tests, can be useful in the detection and diagnosis of some type of cancers. However, in mostinstances tumor marker levels alone are not sufficient to diagnose cancer for example, in patients with cirrhosis or viral hepatitis may have abnormal Alpha-Fetoprotein(AFP) values, although usually less than 500 ng per mL but pregnancy also associated with elevated AFP levels, particularly if the pregnancy is complicated by a spinalcord defect or other abnormality . No simple tests are yet available with sufficient sensitivity and specificity to detect the presence of a cancer. The field of tumor markers is ever expanding with many new candidate markers either in clinical use or under active evaluation.

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Abstract –Path-09

Apoptosis

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In general apoptosis confers advantages during an organism's lifecycle. For example, the separation of fingers and toes in a developing human embryo occurs because cells between the digits apoptose. Unlike necrosis, apoptosis produces cell fragments called apoptotic bodies that phagocytic cells are able to engulf and quickly remove before the contents of the cell can spill out onto surrounding cells and cause damage. Between 50 and 70 billion cells die each day due to apoptosis in the average human adult. For an average child between the ages of 8 and 14, approximately 20 billion to 30 billion cells die a day. The intracellular machinery responsible for apoptosis seems to be similar in all animal cells. This machinery depends on a family of proteases that have a cysteine at their active site and cleave their target proteins at specific aspartic acids. They are therefore called caspases. Caspases are synthesized in the cell as inactive precursors, or procaspases, which are usually activated bycleavage at aspartic acids by other caspases . Once activated, caspases cleave, and thereby activate, other procaspases, resulting in an amplifying proteolytic cascade . Some of the activated caspases then cleave other key proteins in the cell. Some cleave the nuclear lamins, for example, causing the irreversible breakdown of the nuclear lamina; another cleaves a protein that normally holds a DNA-degrading enzyme (a DNAse) in an inactive form, freeing the DNAse to cut up the DNA in the cell nucleus. In this way, the cell dismantles itself quickly and neatly, and its corpse is rapidly taken up and digested by another cell. Activation of the intracellular cell death pathway, like entry into a new stage of the cell cycle, is usually triggered in a complete, all-or-none fashion. The protease cascade is not only destructive and self-amplifying but also irreversible, so that once a cell reaches a critical point along the path to destruction, it cannot turn back. In multicellular organisms, cells that are no longer needed or are a threat to the organism are destroyed by a tightly regulated cell suicide process known as programmed cell death, or apoptosis. Apoptosis is mediated by proteolytic enzymes called caspases, which trigger cell death by cleaving specific proteins in the cytoplasm and nucleus. Caspases exist in all cells as inactive precursors, or procaspases, which are usually activated by cleavage by other caspases, producing a proteolytic caspase cascade. The activation process is initiated by either extracellular or intracellular death signals, which cause intracellular adaptor molecules to aggregate and activate procaspases. Caspase activation is regulated by members of the Bcl-2 and IAP protein families.

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Abstract –Path-10

Insight Into Atherosclerosis

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Atherosclerosis (also known as arteriosclerotic vascular disease or ASVD) is a specific form of arteriosclerosis in which an artery wall thickens as a result of the accumulation of calcium and fatty materials such as cholesterol and triglyceride. It reduces the elasticity of the artery walls and therefore allows less blood to travel through. This also increases blood pressure. It is a syndrome affecting. It is commonly referred to as a hardening or furring of the arteries. It is caused by the formation of multiple plaques within the arteries. The atheromatous plaque is divided into three distinct components. The atheroma , which is the nodular accumulation of a soft, flaky, yellowish material at the center of large plaques, composed of macrophages nearest the lumen of the artery with underlying areas of cholesterol crystals and calcification at the outer base of older/more advanced lesions. Plaques from atherosclerosis can behave in different ways. They can stay within the artery wall. There, the plaque grows to a certain size and stops. They can grow in a slow, controlled way into the path of blood flow. Eventually, they cause significant blockages. Pain on exertion (in the chest or legs) is the usual symptom. The worst-case scenario: plaques can suddenly rupture, allowing blood to clot inside an artery. In the brain, this causes a stroke; in the heart, a heart attack. The plaques of atherosclerosis cause the three main kinds of cardiovascular disease. Coronary artery disease - Stable plaques in the heart's arteries cause angina(chest pain on exertion). Sudden plaque rupture and clotting causes heart muscle to die. This is a heart attack, or myocardial infarction. Cerebrovascular disease - Ruptured plaques in the brain's arteries causes strokes, with the potential for permanent brain damage. Temporary blockages in an artery can also cause transient ischemic attacks (TIAs), which are warning signs of stroke; however, there is no brain injury. Peripheral artery disease - Narrowing in the arteries of the legs caused by plaque. Peripheral artery disease causes poor circulation. This causes pain on walking and poor wound healing. Severe disease may lead to amputations. Angiography and stenting - Cardiac catheterization with angiography of the coronary arteries is the most common angiography procedure performed. Using a thin tube inserted into an artery in the leg or arm, doctors can access diseased arteries. Blockages are visible on a live X-ray screen. Angioplasty (catheters with balloon tips) and stenting can often open up a blocked artery. Stenting helps to reduce symptoms, although it does not prevent future heart attacks. Bypass surgery - Surgeons "harvest" a healthy blood vessel (often from the leg or chest). They use the healthy vessel to bypass a segment blocked by atherosclerosis.

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PATHOLOGY
POSTER PRESENTATIONS

Abstract -Path-01

Odontogenic Cyst

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Odontogenic cyst are a group of jaw cysts that are formed from tissues involved in odontogenesis (tooth development). Odontogenic cysts are closed sacs, and have a distinct membrane derived from rests of odontogenic epithelium. It may contain air, fluids, or semi-solid material. Intra-bony cysts are most common in the jaws, because the mandible and maxilla are the only bones with epithelial components. That odontogenic epithelium is critical in normal tooth development. However, epithelial rests may be the origin for the cyst lining later. Not all oral cysts are odontogenic cyst. For example, mucous cyst of the oral mucosa and nasolabial duct cyst are not of odontogenic origin. In addition, there are several conditions with so-called (radiographic) 'pseudocystic appearance' in jaws; ranging from anatomic variants such as Stafne static bone cyst, to the aggressive aneurysmal bone cyst.Odontogenic cysts that can be problematic because of recurrence and/or aggressive growth include odontogenic keratocyst (OKC), calcifying odontogenic cyst, and the recently described glandular odontogenic cyst. The OKC has significant growth capacity and recurrence potential and is occasionally indicative of the nevoid basal cell carcinoma syndrome. There is also an orthokeratinized variant, the orthokeratinized odontogenic cyst, which is less aggressive and is not syndrome associated. Ghost cell keratinization, which typifies the calcifying odontogenic cyst, can be seen in solid lesions that have now been designated odontogenic ghost cell tumor. Fibroosseous lesions of the jaws show considerable microscopic overlap and include fibrous dysplasia, ossifying fibroma, periapical cementoosseous dysplasia, and low-grade chronic osteomyelitis. The term fibrous dysplasia is probably overused in general practice and should be reserved for the rare lesion that presents as a large, expansile, diffuse opacity of children and young adults. The need to use clinicopathologic correlation in assessing these lesions is of particular importance. Central giant cell granuloma is a relatively common jaw lesion of young adults that has an unpredictable behavior. Microscopic diagnosis is relatively straightforward; however, this lesion continues to be somewhat controversial because of its disputed classification (reactive versus neoplastic) and because of its management (surgical versus. medical). Its relationship to giant cell tumor of long bone remains undetermined.

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Abstract -Path-02

Oral manifestations in AIDS

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Oral manifestations of HIV disease are common and include oral lesions and novel presentations of previously known opportunistic diseases. Careful history taking and detailed examination of the patient's oral cavity are important parts of the physical examination, and diagnosis requires appropriate investigative techniques. Early recognition, diagnosis, and treatment of HIV-associated oral lesions may reduce morbidity. Oral candidiasis is most commonly associated with Candida albicans, although other species, such as C. glabrata and C. tropicalis, are frequently part of the normal oral flora. A number of factors predispose patients to develop candidiasis: infancy, old age, antibiotic therapy, steroid and other immunosuppressive drugs, xerostomia, anemia, endocrine disorders, and primary and acquired immunodeficiency. Candidiasis is a common finding in people with HIV infection. Reports describe oral candidiasis during the acute stage of HIV infection, but it occurs most commonly with falling CD4+ T-cell count in middle and late stages of HIV disease. Human papilloma virus lesions - Oral warts, papillomas, skin warts, and genital warts are associated with the human papillomavirus (HPV). Lesions caused by HPV are common on the skin and mucous membranes of persons with HIV disease. Because the HPV types found in oral lesions in HIV-infected persons are different from the HPV types associated with anogenital warts, clinicians should probably not use the term condyloma acuminata to describe oral HPV lesions. Periodontal disease is a fairly common problem in both asymptomatic and symptomatic HIV-infected patients. It can take two forms: the rapid and severe condition called necrotizing ulcerative periodontitis (NUP) and its associated and possibly precursor condition called linear gingival erythema (LGE). The presenting clinical features of these diseases often differ from those in non-HIV-infected persons. Kaposi's sarcoma (KS) may occur intraorally, either alone or in association with skin and disseminated lesions. Intraoral lesions have been reported at other sites and may be the first manifestation of late-stage HIV disease (AIDS). KS occurs most commonly in men but also has been observed in women. Oral hairy leukoplakia (HL), which presents as a nonmovable, corrugated or "hairy" white lesion on the lateral margins of the tongue, occurs in all risk groups for HIV infections, although less commonly in children than in adults. HL occurs in about 20% of persons with asymptomatic HIV infection and becomes more common as the CD4+ T-cell count falls. No report describes HL in mucosal sites other than the mouth.

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Abstract -Path-03

Liver Lesions In Hepatitis

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Hepatitis is the elementary lesions include acidophil necrosis (apoptosis), confluent lytic necrosis in its different patterns, piecemeal necrosis, focal necrosis, and dysplastic hepatocytes. In acute hepatitis the lesions (areas of abnormal tissue) predominantly contain diffuse sinusoidal and portal mononuclear infiltrates (lymphocytes, plasma cells, Kupffer cells) and swollen hepatocytes. Acidophilic cells (Councilman bodies) are common. Hepatocyte regeneration and cholestasis (canalicular bile plugs) typically are present. Bridging hepatic necrosis (areas of necrosis connecting two or more portal tracts) may also occur. There may be some lobular disarray. Although aggregates of lymphocytes in portal zones may occur these are usually neither common nor prominent. The normal architecture is preserved. There is no evidence of fibrosis or cirrhosis (fibrosis plus regenerative nodules). In severe cases prominent hepatocellular necrosis around the central vein (zone 3) may be seen. In submassive necrosis – a rare presentation of acute hepatitis – there is widespread hepatocellular necrosis beginning in the centrizonal distribution and progressing towards portal tracts. The degree ofparenchymal inflammation is variable and is proportional to duration of disease. Two distinct patterns of necrosis have been recognised: (1) zonal coagulative necrosis or (2) panlobular (nonzonal) necrosis. Numerous macrophages and lymphocytes are present. Necrosis and inflammation of the biliary tree occurs. Hyperplasia of the surviving biliary tract cells may be present. Stromal haemorrhage is common.The histology may show some correlation with the cause: Zone 1 (periportal) occurs in phosphorus poisoning or eclampsia. Zone 2 (midzonal) – rare – is seen in yellow fever. Zone 3 (centrilobular) occurs with ischemic injury, toxic effects, carbon tetrachloride exposure or chloroform ingestion. Drugs such as acetaminophen may be metabolized in zone 1 to toxic compounds that cause necrosis in zone 3. Where patients have recovered from this condition, biopsies commonly show multiacinar regenerative nodules (previously known as adenomatous hyperplasia). Chronic hepatitis with piecemeal (periportal) necrosis (or interface hepatitis) with or without fibrosis (formerly chronic active hepatitis) is any case of hepatitis occurring for more than 6 months with portal based inflammation, fibrosis, disruption of the terminal plate, and piecemeal necrosis. This term has now been replaced by the diagnosis of 'chronic hepatitis'.Chronic hepatitis without piecemeal necrosis (formerly called chronic persistent hepatitis) has no significant periportal necrosis or regeneration with a fairly dense mononuclear portal infiltrate.

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Abstract -Path-04

Osteoporosis

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Osteoporosis is a progressive bone disease that is characterized by a decrease in bone mass and density which can lead to an increased risk of fracture. In osteoporosis, the bone mineral density (BMD) is reduced, bone microarchitecture deteriorates, and the amount and variety of proteins in bone are altered.The risk of osteoporosis fractures can be reduced with lifestyle changes and in those with previous osteoporosis related fractures medications. Lifestyle change includes diet, exercise, and preventing falls. The utility of calcium and vitamin D is questionable in most. Bisphosphonates are useful in those with previous fractures from osteoporosis but are of minimal benefit in those who have osteoporosis but no previous fractures. Osteoporosis is a component of the frailty syndrome. Bisphosphonates are useful in decreasing the risk of future fractures in those who have already sustained a fracture due to osteoporosis. This benefit is present when taken for three to four years. They have not been compared directly to each other, though, so it is not known if one is better. Fracture risk reduction is between 25 and 70% depending on the bone involved. There are concerns of atypical femoral fractures and osteonecrosis of the jaw with long term use, but these risk are low. With evidence of little benefit when used for more than three to five years and in light of the potential adverse events, it may be appropriate to stop treatment after this time in some. For those with osteoporosis but who have not had any fractures evidence does not support a reduction of in fracture risk with risedronate or etidronate. Alendronate may decrease fractures of the spine but does not have any effect on other types of fractures. Half stop their medications within a year. Teriparatide (a recombinant parathyroid hormone) has been shown to be effective in treatment of women with postmenopausal osteoporosis. Some evidence also indicates strontium ranelate is effective in decreasing the risk of vertebral and nonvertebral fractures in postmenopausal women with osteoporosis. Hormone replacement therapy, while effective for osteoporosis, is only recommended in women who also have menopausal symptoms. Raloxifene, while effective in decreasing vertebral fractures, does not affect the risk of nonvertebral fracture. And while it reduces the risk of breast cancer, it increases the risk of blood clots and strokes. Denosumab is also effective for preventing osteoporotic fractures In hypogonadal men, testosterone has been shown to improve bone quantity and quality, but, as of 2008, no studies evaluated its effect on fracture risk or in men with a normal testosterone levels. Calcitonin while once recommended is no longer due to the associated risk of cancer with its use and questionable effect on fracture risk.

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Abstract -Path-05

Microscopic Variants Of Squamous Cell Carcinoma

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Squamous-cell carcinoma (SCC or SqCC) is a cancer which affects the epithelial cells, namely the the squamous cell. These cells are the main components of the epidermis of the skin, and this is one of the major forms of skin cancer. However, squamous cells also occur in the lining of the digestive tract, lungs, and other areas of the body, and SCC occurs as a form of cancer in diverse tissues, including the lips, mouth, esophagus, urinary bladder, prostate, lung, vagina, and cervix, among others. Despite sharing the name squamous cell carcinoma, the SCCs of different body sites can show tremendous differences in their presenting symptoms, natural history, prognosis, response to treatment and morphology when viewed under a microscope. SCC is a histologically distinct form of cancer. It arises from the uncontrolled multiplication of cells of epithelium, or cells showing particular cytological or tissue architectural characteristics of squamous cell differentiation, such as the presence of keratin, tonofilament bundles, or desmosomes, structures involved in cell-to-cell adhesion. SCC is still sometimes referred to as "epidermoid carcinoma" and "squamous cell epithelioma", though the use of these terms has decreased. One method of classifying squamous cell carcinomas is by their appearance under microscope. It has a number of microscopic variations based on the location of the carcinoma. Adenoid squamous-cell carcinoma' (also known as "Pseudoglandular squamous-cell carcinoma"), characterized by a tubular microscopic pattern and keratinocyte acantholysis. Basaloid squamous-cell carcinoma is characterized by a predilection for the tongue base. Clear-cell squamous-cell carcinoma (also known as "Clear-cell carcinoma of the skin") is characterized by keratinocytes that appear clear as a result of hydropic swelling. Signet ring cell squamous cell carcinoma (occasionally rendered as "signet-ring-cell squamous-cell carcinoma") is a histological variant characterized by concentric rings composed of keratin and large vacuoles corresponding to markedly dilated endoplasmic reticulum. These vacuoles grow to such an extent that they radically displace the cell nucleus toward the cell membrane, giving the cell a distinctive superficial resemblance to a "signet ring" when viewed under a microscope. Spindle-cell squamous-cell carcinoma (also known as "Spindle-cell carcinoma") is a subtype characterized by spindle-shaped atypical cells. These are some of the microscopic variants of squamous cell carcinoma.

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Abstract -Path-06

Obesity And Its Effects

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Obesity is a medical condition in which excess body fat has accumulated to the extent that it may have a negative effect on health, leading to reduced life expectancy and/or increased health problems. People are considered obese when their body mass index (BMI), a measurement obtained by dividing a person's mass by the square of the person's height, exceeds 30 kg/m^2. Obesity increases the likelihood of various diseases, particularly heart disease, type 2 diabetes, obstructive sleep apnea, certain types of cancer, and osteoarthritis. Obesity is most commonly caused by a combination of excessive food energy intake, lack of physical activity, and genetic susceptibility, although a few cases are caused primarily by genes, endocrine disorders, medications or psychiatric illness. Evidence to support the view that some obese people eat little yet gain weight due to a slow metabolism is limited. On average obese people have a greater energy expenditure than their thin counterparts due to the energy required to maintain an increased body mass.Dieting and physical exercise are the mainstays of treatment for obesity. Diet quality can be improved by reducing the consumption of energy-dense foods such as those high in fat and sugars, and by increasing the intake of dietary fiber. Anti-obesity drugs may be taken to reduce appetite or decrease fat absorption when used together with a suitable diet. If diet, exercise and medication are not effective, a gastric balloon may assist with weight loss, or surgery may be performed to reduce stomach volume and/or bowel length, leading to feeling full earlier and a reduced ability to absorb nutrients from food. Obesity is a leading preventable cause of death worldwide, with increasing rates in adults and children. Authorities view it as one of the most serious public health problems of the 21st century. Obesity is stigmatized in much of the modern world (particularly in the Western world), though it was widely seen as a symbol of wealth and fertility at other times in history, and still is in some parts of the world. In 2013, the American Medical Association classified obesity as a disease.

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Abstract -Path-07

Uncommon Salivary Gland Tumours

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Basal cell adenoma is a benign tumor resembling pleomorphic adenoma but with basaloid cells and peripheral palisading. First described by Kleinasser and Klein in 1967. Also called monomorphic adenoma; excludes canalicular adenoma. It comprises about 1-2% of epithelial tumors of salivary glands; 2% of benign salivary gland tumors. It is solitary, or part of Turban tumor Brooke-Spiegler syndrome. Affects usually adults, 2/3 female, mean age 58 years. It is rarely congenital and resembles embryoma and affects parotid gland or periparotid lymph nodes with low recurrence rate. The term ductal papilloma is used to identify a group of 3 rare benign papillary salivary gland tumors known as inverted ductal papilloma, sialadenoma papilliferum, and intraductal papilloma. They represent adenomas with unique papillary features and arise from the salivary gland duct system. The lip and the palate were the most common locations for inverted ductal papilloma and sialadenoma papilliferum, respectively. The sites for the intraductal papillomas were the parotid papilla of the Stensen's duct, the upper lip, and the buccal mucosa. With light microscopy, inverted ductal papillomas appeared to arise from the excretory ducts near the mucosal surface, whereas intraductal papillomas appeared to arise from the excretory ducts at a deeper level. Myoepithelioma of the head and neck, also myoepithelioma, is a salivary gland tumour of the head and neck that is usually benign. As the name suggests, it consists of myoepithelial cells. Classically, they are found in the parotid gland or palate. The myoepithelial cells may be spindled, plasmacytoid, eithelioid or clear. Tubules or epithelium are absent, or present in a small amount (<5%) by definition. Tumours with myoepithelial cells and a large amount of tubules are classified as pleomorphic adenomas (which must also contain the characteristic chondromyxoid stroma, which is normally absent in myoepithelioma). Acinic cell carcinoma is a tumor most commonly found in the parotid gland. The disease presents as a slow growing mass, sometimes associated with pain or tenderness. These tumors which resemble serous acinar cells vary in their behavior from locally aggressive to blatantly malignant. Salivary gland oncocytomas are most common in ages 70–80, females, the parotid gland (85-90%), and are firm, slowly growing, painless masses of < 4 cm. They may be bilateral.

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Abstract -Path-08

Manifestations Of Rheumatic Heart Disease

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Rheumatic heart disease describes a group of short-term (acute) and long-term (chronic) heart disorders that can occur as a result of rheumatic fever. One common result of rheumatic fever is heart valve damage. This damage to the heart valves may lead to a valve disorder. Every part of the heart, including the outer sac (the pericardium), the inner lining (the endocardium) and the valves may be damaged by inflammation caused by acute rheumatic fever. However, the most common form of rheumatic heart disease affects the heart valves, particularly the mitral valve. It may take several years after an episode of rheumatic fever for valve damage to develop or symptoms to appear. Manifestations of RHD includes major criteria as follows. Polyarthritis - A temporary migrating inflammation of the large joints, usually starting in the legs and migrating upwards. Carditis - Inflammation of the heart muscle (myocarditis) which can manifest as congestive heart failure with shortness of breath, pericarditis with a rub, or a new heart murmur. Subcutaneous nodules - Painless, firm collections of collagen fibers over bones or tendons. They commonly appear on the back of the wrist, the outside elbow, and the front of the knees. Erythema marginatum - a long-lasting reddish rash that begins on the trunk or arms as macules, which spread outward and clear in the middle to form rings, which continue to spread and coalesce with other rings, ultimately taking on a snake-like appearance. This rash typically spares the face and is made worse with heat. Sydenham's chorea (St. Vitus' dance) - A characteristic series of rapid movements without purpose of the face and arms. This can occur very late in the disease for at least three months from onset of infection. Minor criteria includes fever of 38.2–38.9 °C (100.8–102.0 °F). Arthralgia - Joint pain without swelling (Cannot be included if polyarthritis is present as a major symptom). Raised erythrocyte sedimentation rate or C reactive protein, Leukocytosis. ECG showing features of heart block, such as a prolonged PR interval (Cannot be included if carditis is present as a major symptom) and previous episode of rheumatic fever or inactive heart disease. Other signs and symptoms include abdominal pain, nose bleeds and preceding streptococcal infection: recent scarlet fever, raised antistreptolysin O or other streptococcal antibody titre, or positive throat culture.

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PHARMACOLOGY

ORAL PRESENTATIONS

Abstact -Pharma -01

OPIOID ANALGESICS BOON OR BANE ?

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Opioid analgesics, also called narcotics, are drugs usually used for treating pain. Opioid analgesics are defined as "all of the natural and semisynthetic alkaloid derivatives from opium, their pharmacologically similar synthetic surrogates, as well as all other compounds whose opioid-like actions are blocked by the nonselective opioid receptor antagonist naloxone.There a several opioid receptors. All are G-protein-coupled cell surface receptors. Clinically useful analgesic families vary in their receptor effects; they range from pure agonists of all receptor types, to selective agonists, to agonist-antagonists.Opioids are commonly prescribed for pain, and their usage may be increasing.In emergency rooms, non-Hispanic white patients are more likely to receive narcotics than patients of other ethnicities. Opioids are effective for short term use .For chronic, non-cancer pain, opioids may give short term reduction in pain compared to placebo.The role of long term treatment of chronic non-cancer pain is not clear.One systematic review found that trials of short term opioids did not improve functional status compared to placebo in chronic pain.However, a second systematic review, found that opioids improved functional status compared to placebo, but not compared to other drugs.As example randomized controlled trials, opioids reduced pain in the short term, but did not improve function in comparison to an cholinergic antagonist placebo or tricyclic antidepressant.Opioid analgesics may cause more drug toxicity, at least in geriatrics, than non-selective inhibitors of cyclooxygenase (non-steroidal anti-inflammatory agents) or cyclooxygenase 2 inhibitors.Oxycodone and codeine may increase mortality relative to codeine and hydrocodone and may cause more drug toxicity in geriatrics than codeine or hydrocodone. In contrast to hydrocodone, oxycodone and codeine are metabolized by cytochrome P-450 CYP2D6 which may lead to variable pharmacokinetics due to single-nucleotide polymorphisms and drug interactions.Opioid analgesics, with long-term use, 80% of patients may have drug toxicity, most commonly gastrointestinal. In addition, substance abuse and "aberrant medication-taking behaviors" may occur.This paper is all about the magical analgesic ,morphine.

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Abstact -Pharma -02

STEROIDS –WONDER DRUGS

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Anabolic steroids are drugs that resemble androgenic hormone such as testosterone. Athletes consume them in the hope of gaining weight, strength, power, speed, endurance, and aggressiveness. They are widely used by athletes involved in such sports as track and field, weight lifting, and American football. However, in spite of their tremendous popularity, their effectiveness is controversial. Almost all athletes who consume these substances acclaim their beneficial effects can also decrease fat by increasing basal metabolic rate , since an increase in muscle mass. Anabolic steroids s increases BMR.Anabolic-androgenic steroids have 2 main effects. The first is an anabolic effect that occurs by stimulating an increase in nitrogen resulting in a positive nitrogen balance with an outcome of increased protein production. This positive nitrogen balance has been shown to result in effects on the musculoskeletal system; influencing lean body mass, muscle size, strength, protein and bone metabolism, as well as collagen synthesis. Secondly, the androgenic effects of anabolic androgenic steroids result in development of secondary sexual characteristics since androgens are responsible for sexual differentiation *in utero* as well as maintenance of sexual function and fertility. The effects of male hormones on accessory sex glands, genital hair growth, and oiliness of the skin are anabolic processes in those tissues. The steroids with the most potent anabolic effect are also those with the greatest androgenic effect.There are four common forms in which anabolic steroids are administered like oral pills, injectablesteroids, creams/gels for topical application and skin patches. Oral administration is the most convenient.The mechanism of action of AAS is thought to be due to both a direct and indirect effect. The direct mechanism is due to the effect of AAS on anabolic receptors since these receptors control the transcription of target genes that may regulate the accumulation of DNA required for muscle growth. When the androgen receptor utilization is increased in skeletal muscles, the result is an increase in muscle mass and strength due to the efficient utilization of amino acids in the body. The indirect mechanisms of AAS are due to an antiglucocorticoid action as well as an interaction with insulin-like growth factor-1 (IGF-1) axis.The wonders behind the use of Anabolic steroids are highlighted here in this paper.

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DRUGS USED IN THE TREATMENT BRONCHIAL ASTHMA

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Bronchial Asthma is a chronic inflammatory disease of the airways that causes periodic "attacks" of coughing, wheezing, shortness of breath, and chest tightness. All steroid hormones have generalized influences on metabolic systems throughout the body. These are sometimes seen as powerful pharmacological side effects when, either during hormone therapy or through some endocrine abnormality, the body is exposed to excessive amounts of a naturally occurring steroid hormone. In some synthetic analogs of the natural hormones, a desired activity is accentuated, whereas others are minimized. Furthermore, just as naturally occurring steroid hormones of differing biological activity (estrogens androgens, glucocorticoids, and mineralocorticoids) often act antagonistically, the many steroid analogs include a number of inhibitors of the natural hormones. There are two kinds of medicines for treating asthma . Control medicines to help prevent attacks and quick-relief (rescue) medicines for use during attacks. The Long-term Medicine are also called maintenance or controller medicines. They are used to prevent symptoms in people with moderate to severe asthma. Some long-term medicines are breathed in (inhaled), such as steroids and long-acting beta-agonists. Others are taken by mouth (oral).These are also called rescue medicines. They are taken for coughing, wheezing, trouble breathing, or an asthma attack; Just before exercising to help prevent asthma symptoms caused by exercise.Quick-relief medicines include Short-acting inhaled bronchodilators, Oral corticosteroids for when you have an asthma attack that is not going away.

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Pharmacotherapy Of Diabetes Mellitus With Reference To Oral Manifestations

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Oral research concerning diabetes mellitus has revealed a number of clinical implications. These include, among others, the need for more intense management of the diabetic patient with periodontal disease because tissue destruction may be accelerated, the need for rapid control of oral infection in these patients in order to prevent exacerbation of the existing metabolic imbalance, and the desirability of performing a screening for diabetes mellitus on all patients exhibiting asymptomatic parotid enlargement. Recently, it has been suggested that periodontitis be added as the sixth complication of diabetes mellitus.It has been shown that uncontrolled or poorly controlled diabetics have a greater incidence of severe periodontal disease compared with those patients who are well controlled or have no diabetes mellitus. This has been found for both type 1 and type 2 diabetics. In addition, the diabetic patient may be predisposed to periodontal disease based on the production of advanced glycation end products, which bind to receptors on specific cells such as the monocyte.Patients who suffer from type 1 or type 2 DM, under poor insulin control, usually manifest an increase to oral infections and periodontitis, which may be associated with an increased incidence of xerostomia and opportunistic infections, such as candidiasis .The incidence increases among diabetics after puberty and as the patient ages. Diabetics suffering from periodontitis are more prone to develop severe oral infection than the nondiabetic person. The PMNs of diabetics have impaired microbicidal activity and blood vessels of diabetics show an increase in basement membrane thickening of the capillaries. Besides manifesting the foregoing changes in the gingival capillaries, diabetics also have a disruption of collagen fibers within the basement membrane. Diabetics seem to have a lowered general host resistance for infections.

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PHARMACOTHERAPY OF ASRANAUT

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Research on the ISS improves knowledge about the effects of long-term space exposure on the human body. Subjects currently under study include muscle atrophy, bone loss, and fluid shift. The data will be used to determine whether space colonisation and lengthy human spaceflight are feasible. As of 2006, data on bone loss and muscular atrophy suggest that there would be a significant risk of fractures and movement problems if astronauts landed on a planet after a lengthy interplanetary cruise (such as the six-month journey time required to fly to Mars.Large scale medical studies are conducted aboard the ISS via the National Space Biomedical Research Institute (NSBRI). Prominent among these is the Advanced Diagnostic Ultrasound in Microgravity study in which astronauts perform ultrasound scans under the guidance of remote experts. The study considers the diagnosis and treatment of medical conditions in space. Usually, there is no physician on board the ISS, and diagnosis of medical conditions is a challenge. It is anticipated that remotely guided ultrasound scans will have application on Earth in emergency and rural care situations where access to a trained physician is difficult .It is inevitable that medical conditions of varying complexity, severity and emergency will occur during spaceflight missions with human participants. Different levels of care are required depending on the problem, available resources and time required to return to Earth. All medical problems have the potential to affect the mission, but significant illnesses or trauma will result in a high probability of mission failure or loss of crew. As the distance that missions travel from Earth increases, more possible medical conditions and types of trauma need to be evaluated. Return to Earth will be highly unlikely or very difficult depending on the distance travelled.Emergency health care will, and psychological support may, have to be self-administered and could possibly be completely autonomous. The most effective way to provide adequate support is to establish a thorough pre-flight health status assessment and develop a systematic approach to autonomous health care in space.

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ALLERGIC MANIFESTATIONS OF DRUGS USED IN DENTISTRY

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An allergy is a hypersensitivity disorder of the immune system. Allergic reactions occur when a person's immune system reacts to normally harmless substances in the environment. These reactions are acquired, predictable, and rapid. An allergic reaction is the medical emergency that can make the most noticeable changes in a patient`s appearance in a matter of minutes. The reactions range from mild rash to a combination of the most serious manifestations of anaphylaxis. In generalized anaphylaxis, the patient can be clinically dead within minutes from the onset of manifestations. En in dental offices behind only syncope .Additionally, "anaphylaxis" was the 11th most common medical emergency seen in dental offices. The most common allergen in the dental environment today, of course, is latex. Penicillin is the most common cause of drug-induced anaphylaxis.Patients will always have allergies to penicillin and the penicillin-like drugs and other drugs and agents prescribed, administered and dispensed in dental offices4manifestations include urticaria (hives), swelling of tongue, pharynx, larynx, bronchospasm, hypotension, cardiac arrhythmias, and abdominal pain. Local anesthesia forms the foundation of pain control techniques in dentistry. These drugs prevent the passage of noxious stimuli to the patient's brain where it would be interpreted as painful. Local anesthetics are used more than any other drugs in dentistry. Problems noted with administration of las may be associated with the drug or some other component of the injected LA solution, the act of administering (injecting) the drug, and localized trauma produced by the needle through which the drug is administered.Penicillin and related antibiotics can cause an allergic reaction in some people. Signs and symptoms of a penicillin allergy include: hives, rash, itchy skin, wheezing, swollen lips, tongue or face. Tell your dentist if you notice any of the signs or symptoms of penicillin allergy.There are also patients who are allergic to pain killers NSAIDs). In patients with asthma, some may have their asthma symptoms worsened by NSAIDS.The most common reactions include: skin symptoms, such as hives and swelling, respiratory symptoms, such as rhinitis and asthma symptoms and anaphylaxis. Avoidance of all of the NSAIDs is the usual treatment for NSAID allergy. It is important to be aware of the huge variety of medications that contain aspirin or related NSAIDs. Allergies to mouthwash can also happen. These can be due to the contents of the mouthwash (alcohol, chemicals or flavourings). This paper deals with the allergic manifestations of drugs used in dentistry.

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PHARMACOVIGILANCE-A VIGILANCE FOR A SAFE TOMORROW.

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Pharmacovigilance also known as drug safety, is the pharmacological science relating to the collection, detection, assessment, monitoring, and prevention of adverse effects with pharmaceutical products. As such, pharmacovigilance heavily focuses on adverse drug reactions, or, which are defined as any response to a drug which is noxious and unintended, including lack of efficacy. Medication errors such as overdose, and misuse and abuse of a drug as well as drug exposure during pregnancy and breastfeeding, because they may result in an adverse drug reactions.. The aims of pharmacovigilance are to ensure safety of the patient and patient care in relation to the use of medicines and to support public health programmes by providing reliable balanced information for the affective assesment of risk-benefit profile of medicines. Developments in dental pharmacotherapeutics require dentists to constantly update their knowledge of new drugs, drug safety, and therapeutic trends. Recent incidents of bisphosphonate associated poor healing, spontaneous intraoral ulceration, and bone necrosis in the oral and maxillofacial region stress the need for vigilant spontaneous reporting of adverse events. Pharmacovigilance is an important and integral part of clinical research and these days it is growing in many countries.A number of researchers have studied about pharmacovigilance. Recently, its concerns have been widened to include herbals, traditional and complementary medicines, blood products, biologicals, medical devices and vaccines.This applies throughout the life cycle of a medicine equally to the pre-approval stage as to the post-approval.The scope of pharmacovigilance is to improve patient care and safety in relation to the use of medicines, and all medical and paramedical interventions. Improve public health and safety in relation to the use of medicines. Contribute to the assessment of benefit, harm, effectiveness and risk of medicines, encouraging their safe, rational and more effective (including cost-effective) use, and promote understanding, education and clinical training in pharmacovigilance and its effective communication to the public. This paper discusses the rationale for pharmacovigilance in dental practice using specific methods and reviews the pros and cons of adverse drug reporting among dental practitioners

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BACTERIAL DRUG RESISTNCE

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Bacterial drug resistance is a form of resistance whereby a bacterial species, are able to survive after exposure to one or more antibiotics. In the past 60 years, antibiotics have been critical in the fight against infectious disease caused by bacteria. However, disease-causing bacteria that have become resistant to antibiotic drug therapy are an increasing public health problem. Wound infections, gonorrhoea, tuberculosis, pneumonia, septicemia and childhood ear infections are just a few of the diseases that have become hard to treat with antibiotics. One part of the problem is that bacteria and other microbes that cause infections are remarkably resilient and have developed several ways to resist antibiotics and other antimicrobial drugs. Another part of the problem is due to increasing use, and misuse, of existing antibiotics in human and veterinary medicine and in agriculture. Nowadays, about 70 percent of the bacteria that cause infections in hospitals are resistant to at least one of the drugs most commonly used for treatment. Some organisms are resistant to all approved antibiotics and can only be treated with experimental and potentially toxic drugs. An alarming increase in resistance of bacteria that cause community acquired infections has also been documented, especially in the staphylococci and pneumococci (Streptococcus pneumoniae), which are prevalent causes of disease and mortality. In a recent study, 25% of bacterial pneumonia cases were shown to be resistant to penicillin, and an additional 25% of cases were resistant to more than one antibiotic**.** Drug resistance occurs when microbes survive and grow in the presence of a drug that normally kills or inhibits the microbe's growth. The history of drug resistance began with the development of antimicrobial drugs, and the subsequent ability of microbes to adapt and develop ways to survive in the presence of antimicrobials. There are many causes of antimicrobial drug resistance including selective pressure, mutation, gene transfer, societal pressures, inappropriate drug use, inadequate diagnostics, hospital use and agricultural use of drugs Diagnosis of antimicrobial drug resistance is performed by lab tests that challenge the isolated microbes to grow and survive in the presence of the drug Treatment of antimicrobial drug resistance depends on the type of infection and what the patient and their doctor decide.

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NSAIDs IN DENTISTRY

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Non steroidal anti-inflammatory drugs (NSAIDs) are a class of drugs that provides analgesic and antipyretic effects, and in, higher doses anti-inflammatory effects. Dental treatment and pain always go hand in hand. Over a long time since man surfaced on earth, tooth has been the most integral part of the human body. Pain encountered in dental practices both acute and chronic has been managed with the help of NSAIDs. Their therapeutic efficacy and toxicity are well documented and provide evidence that these generally provide an acceptable therapeutic ratio of pain relief with fewer adverse effects than the opioid-mild analgesic combination drugs that they have largely replaced for moderate dental applications. The type of NSAID most preferred to tackle dental pain is ibuprofen because of its potency in combating inflammation and thereby reducing it t relieve pain. The use of repeated doses of NSAIDs for chronic orofacial pain should be re -evaluated in the light of a lack of documented efficacy and the potential for serious gastrointestinal and renal toxicity with repeated dosing. Nonsteroidal antiinflammatory drugs are drugs commonly prescribed in dental practice for the management of pain and swelling. Of these substances, paracetamol and ibuprofen are the most widely used. Their mechanism of action is based on the inhibition of cyclooxygenase, and therefore of prostaglandin synthesis. All of these drugs present a similar mechanism of action, as a result of which their side effects are also similar. The most frequent range from mild (e.g., nausea or vomiting) to serious gastric problems (such as gastric bleeding or perforation). Other side effects include an increased risk of vascular accidents (particularly acute myocardial infarction), renal toxicity secondary to a decrease in perfusion, and the risk of abnormal bleeding tendency due to the antiplatelet effect of these drugs. Their use is contraindicated in the third trimester of pregnancy, due to the induction of premature ductus arteriosus closure. This paper highlights the importance in NSAIDs in dentistry

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Abstact -Pharma -10

Obesity-Recent Trend Of Mankind Preventive Measures And Pharmacotheraphy.

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Obesity is a multi-factorial disorder, which is often associated with many other significant diseases such as diabetes, hypertension and other cardiovascular diseases, osteoarthritis and certain cancers. The management of obesity will therefore require a comprehensive range of strategies focussing on those with existing weight problems and also on those at high risk of developing obesity. An effective control of obesity requires the development of coherent strategies that tackle the main issues related to preventing the development of overweight in normal weight individuals,the progression of overweight to obesity in those who are already over weight,weight regain in those who have been overweight or obese in the past but who have since lost weight and further worsening of a condition already established.
The prevention of obesity involves action at several levels i) Primary ii) Secondary iii) Tertiary .Objective of primary prevention is to decrease the number of new cases, secondary prevention is to lower the rate of established cases in the community and tertiary prevention is to stabilise or reduce the amount of disability associated with the disorder. When the attention is focused on the multifactorial condition such as coronary heart disease (CHD), primary prevention of this involves national programmes to control blood cholesterol levels and secondary prevention deals with reducing CHD risk in those with existing elevated blood cholesterol levels while tertiary action would be associated with preventing re-infarction in those who had a previous heart attack.Pharmacological approaches in obesity treatment
Most available weight loss medications are "appetite suppressant" medications. The initial drugs used for appetite suppression were amphetamine, metamphetamine and phenmetrazine are no longer used in treatment of obesity because of their high potential for abuse. Inhibitors of 5-hyroxytryptamine reuptake, fenfluramine and dexfenfluramine were licensed for obesity but proved to cause pulmonary hyper tension and increased valvular heart disease and have been withdrawn from the market. Drugs like phendimetrazine , diethylpropion , phentermine etc., are being marketed but have been classified as controlled substances and are recommended for short-term use only.The newest agents available for weight loss are sibu- tramine and orlistat. Sibutramine is the serotonin and norepinephrine re- uptake inhibitor, which induces decreased food intake and increased thermogensis.Orlistat is a potent and irreversible inhibitor of gastric, pancreatic lipases. It blocks the digestion of approxi- mately 30% of the ingested triglycerides.

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PHARMACOLOGY
POSTER PRESENTATIONS

Abstact -Pharma -01

DRUG ABUSE

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Substance abuse, also known as drug abuse, is a patterned use of a substance (drug) in which the user consumes the substance in amounts or with methods which are harmful to themselves or others. The term "drug abuse" does not exclude dependency, but is otherwise used in a similar manner in nonmedical contexts.Drug abuse is a serious public health problem that affects almost every community and family in some way. Each year drug abuse causes millions of serious illnesses or injuries among Americans. Abused drugs include Amphetamines,Anabolicsteroids,Clubdrugs,Cocaine,Heroin,Inhalants,Marijuana,Prescription drugs.Drug abuse also plays a role in many major social problems, such as drugged driving, violence, stress, and child abuse.. There are different types of treatment for drug abuse. Some of the drugs most often associated with this term include alcohol, substituted amphetamines, barbiturates, benzodiazepines (particularly alprazolam,temazepam, diazepam and clonazepam), cocaine, methaqualone, and opioids. Use of these drugs may lead to criminal penalty in addition to possible physical, social, and psychological harm, both strongly depending on local jurisdiction.There are many cases in which criminal or antisocial behavior occur when the person is under the influence of a drug. Long term personality changes in individuals may occur as well. Substance abuse is prevalent with an estimated 120 million users of hard drugs such as cocaine, heroin, and other synthetic drugs. Drug addiction puts its sufferers at risk for potentially grave social, occupational, and medical complications. Drug addiction increases the risk of domestic violence in families. Individuals with chemical dependency are also much more likely to lose their job and less likely to find a job compared to people who are not drug addicted. Children of drug addicted parents are at higher risk for poor social, educational, and health functioning, as well as being at higher risk for abusing drugs themselves.In addition to the many devastating social and occupational complications of drug addiction, there are many medical complications of chemical dependency. From the respiratory arrest associated with heroin or sedative overdose to the heart attack or stroke that can be caused by cocaine or amphetamine intoxication, death is a highly possible complication of drug addiction. People who are dependent on drugs are also at higher risk of developing chronic medical conditions as complications of drug addiction. Liver failure and pancreatitis associated with alcoholism and brain damage associated with alcoholism or inhalants are just two such examples.

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TECHNIQUES OF ADMINISTRATION OF LOCAL ANAESTHESIA

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A local anesthetic (LA) is a drug that causes reversible local anesthesia, generally for the aim of having a local analgesic effect, that is, inducing absence of pain sensation, although other local senses are often affected as well. Also, when it is used on specific nerve pathways ,paralysis can be achieved as well.Clinical local anesthetics belong to one of two classes: aminoamide and aminoester local anesthetics. Synthetic local anesthetics are structurally related to cocaine. Local anesthetics vary in their pharmacological properties and they are used in various techniques of local anesthesia such as:Topical anesthesia,Infiltration Plexus block,Epidural block,Spinal anesthesia.Local anesthetics can block almost every nerve between the peripheral nerve endings and the central nervous system. The most peripheral technique is topical anesthesia to the skin or other body surface. Small and large peripheral nerves can be anesthetized individually or in anatomic nerve bundles (plexus anesthesia). Spinal anesthesia and epidural anesthesia merges into the central nervous system.Injection of local anesthetics is often painful.Clinical techniques include:Surface anesthesia - application of local anesthetic spray, solution or cream to the skin or a mucous membrane. The effect is short lasting and is limited to the area of contact.Infiltration anesthesia - injection of local anesthetic into the tissue to be anesthetized. Surface and infiltration anesthesia are collectively topical anesthesia.Field block - subcutaneous injection of a local anesthetic in an area bordering on the field to be anesthetized. Peripheral nerve block - injection of local anesthetic in the vicinity of a peripheral nerve to anesthetize that nerve's area of innervation.Plexus anesthesia - injection of local anesthetic in the vicinity of a nerve plexus, often inside a tissue compartment that limits the diffusion of the drug away from the intended site of action. The anesthetic effect extends to the innervation areas of several or all nerves stemming from the plexus.Epidural anesthesia - a local anesthetic is injected into the epidural space where it acts primarily on the spinal nerve roots. Depending on the site of injection and the volume injected, the anesthetized area varies from limited areas of the abdomen or chest to large regions of the body.

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Abstact -Pharma -03

POISONS- MANAGEMENT OF POISONING

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Acute poisoning with pesticides is a global public health problem and accounts for as many as 300 000 deaths worldwide every year. The majority of deaths occur due to exposure to organophosphates, organochlorines and aluminium phosphide. Organophosphate compounds inhibit acetylcholinesterase resulting in acute toxicity. Intermediate syndrome can develop in a number of patients and may lead to respiratory paralysis and death. Organophosphorus (OP) compounds have been widely used for a few decades in agriculture for crop protection and pest control, thousands of these compounds have been screened and over one hundred of them have been marketed for these purposes . OPs constitute a heterogeneous category of chemicals specifically designed for the control of pests, weeds or plant diseases. Their application is still the most effective and accepted means for the protection of plants from pests, and has contributed significantly to enhanced agricultural productivity and crop yields. Some have also been used in the medical treatment of myasthenia gravis, e.g. diisopropyl phosphorofluoridate , tetraethyl pyrophosphate (TEPP), and octomethyl pyrophosphotetramide . Some OP esters arestill used to treat glaucoma (Ecothiophate). In addition to these beneficial agricultural, veterinary, and medical uses, some highly potent OP anticholinesterase compounds, including tabun, sarin, soman, and VX have been used as “nerve gases” in chemical warfare. They are also been used as plasticizers, stabilizers in lubricating and hydraulic oils, flame retardants, and gasoline additives. The symptoms of poisoning include marked miosis and loss of pupillary reflex to light, muscle fasciculations, flaccid paralysis, pulmonary rales, respiratory distress, cyanosis. The patient is unconscious. Serum cholinesterase: Less than 10% of normal value. Treatment:Atropine 5 mg every 15 to 30 minutes until signs of atropinization appears. Pralidoxime 1 to 2 g IV. If therapy is not followed by improvement, IV infusion of pralidoxime at 5 g/hr. Due to the toxicity of pesticides and the risk involved in treatments, there is general agreement that emphasis should be on preventing pesticide illness rather than relying on treatment. Use gloves and other protective clothing when using or applying pesticides. Always wash your hands after using pesticides. Ensure regular washing of children’s hands throughout the day. Ensure that all pesticides and poisons are stored out of reach of children and other unqualified persons i.e. locked in a poison store. Ensure adequate education of children with regard to poisons within the home environment. This poster high lights the management of organophosphorous poisoning and its management.

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ALCOHOL-THE KILLER OF MANKIND SYMPTOMS AND TREATMENT

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An alcoholic beverage is a drink that contains ethanol. Alcoholic beverages are divided into three general classes for taxation and regulation of production beers, wines, and spirits. They are legally consumed in most countries around the world. More than 100 countries have laws regulating their production, sale, and consumption. Early signs of alcoholism include frequent intoxication, an established pattern of heavy drinking and drinking in dangerous situations, such as when driving. Other early signs of alcoholism include black-out drinking or a drastic change in demeanor while drinking, such as consistently becoming angry or violent. The main symptom of alcohol abuse occurs when someone continues to drink after their drinking reaches a level that causes recurrent problems. Alcohol abuse is defined as drinking despite alcohol-related physical, social, psychological, or occupational problems, or drinking in dangerous situations, such as while driving. The World Health Organization's International Classification of Diseases refers to "harmful use" of alcohol, or drinking that causes either physical or mental damage in the absence of alcohol dependence. In other words, alcohol abuse is any harmful use of alcoholSome of the possible long-term effects of ethanol an individual may develop. Additionally, in pregnant women, alcohol can cause fetal alcohol syndrome.Alcoholism is characterised by an increased tolerance of and physical dependence on alcohol, affecting an individual's ability to control alcohol consumption safely. These characteristics are believed to play a role in impeding an alcoholic's ability to stop drinking.Alcoholism can have adverse effects on mental health, causing psychiatric disorders and increasing the risk of suicide. A depressed mood is a common symptom.Treatments are varied because there are multiple perspectives of alcoholism. Most treatments focus on helping people discontinue their alcohol intake, followed up with life training and/or social support to help them resist a return to alcohol use. Treatment is detoxification followed by a combination of supportive therapy, attendance at self-help groups, and ongoing development of coping mechanisms. The treatment community for alcoholism typically supports an abstinence-based zero tolerance approach; however, some prefer a harm-reduction approach.

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Abstact -Pharma -05

Pharmacotherapeutic Approach Of The Disease Of Cardio Vascular System

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Cardiovascular disease is the most common cause of death worldwide and will become even more prevalent as the population ages. New therapeutic targets are being identified as a result of emerging insights into disease mechanisms, and new strategies are also being tested, possibly leading to new treatment options. Improving diagnosis is also crucial, because by detecting disease early, the focus could be shifted from treatment to prevention.cardiovascular disease (CVD) includes heart disease (i.e., myocardial infarction and angina), stroke, hypertension, congestive heart failure (CHF), hardening ofthe arteries, and other circulatory system diseases. CVD is the number one cause of death in America, responsible for more than 40% of annual deaths.In addition to mortality, poorly managed CVD can lead to significant long-term disability from the complications of heartattacks, strokes, heart failure, and end-stage renal diseases.Management is characterized by a systematic population-based approachto identify persons at risk, implement detailed programs of care,measure outcomes of interest, and achieve continuous quality improvement in the care processes that contribute to these outcomes.Being overweight in adulthood is well known to increase the risk of cardiovascular disease. However, the effect of obesity on children is currently less well understood, in terms of the age at which risk parameters for cardiovascular disease begin to be affected and the magnitude of the effect. Atherosclerosis has also been shown to begin as early as nine years of age; the cross sectional area of the common carotid artery wall and the mean intima media thickness of the internal carotid artery increases considerably from lean to obese children. Risk parameters for cardiovascular disease in childhood such as body mass index, cholesterol, blood pressure, and triglyceride concentrations have shown to be significantly correlated with adult levels over long term follow-up. Furthermore, raised risk of cardiovascular disease has been found as well as increased coronary heart disease events over a five million person year follow-up. Therefore, childhood health could greatly affect the risk of cardiovascular disease in adulthood. Overweight and obese children have raised risk parameters for cardiovascular disease compared with normal weight children. In addition, the continuous association between body mass index and risk parameters for cardiovascular disease is an area of interest for future research, particularly if the change in risk parameters per unit increase of body mass index can be established.The various treatment modalities and preventive measurs are highlighted in this poster.

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PHYSIOLOGY

ORAL PRESENTATIONS

Abstract – Physio -01

Blood groups

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Thirty-three major blood group systems (including the AB and Rh systems) were recognised by the International Society of Blood Transfusion (ISBT) in October 2012. In addition to the ABO antigens and Rhesus antigens, many other antigens are expressed on the red blood cell surface membrane. For example, an individual can be AB RhD positive, and at the same time M and N positive (MNS system), K positive (Kell system), and Le^a or Le^b positive (Lewis system). The most well-known and medically important blood types are in the ABO group. They were discovered in 1900 and 1901 at the University of Vienna by Karl Landsteiner in the process of trying to learn why blood transfusions sometimes cause death and at other times save a patient. In 1930, he belatedly received the Nobel Prize for his discovery of blood types. All humans and many other primates can be typed for the ABO blood group. There are four principal types: A, B, AB, and O. there are two antigens and two antibodies that are mostly responsible for the ABO types. The specific combination of these four components determines an individual's type in most cases. The table below shows the possible permutations of antigens and antibodies with the corresponding ABO type ("yes" indicates the presence of a component and "no" indicates its absence in the blood of an individual). Many of the blood group systems were named after the patients in whom the corresponding antibodies were initially encountered. The ISBT definition of a blood group system is where one or more antigens are "controlled at a single gene locus or by two or more very closely linked homologous genes with little or no observable recombination between them". The most common type of grouping is the ABO (either uppercase or lowercase) grouping. The varieties of glycoprotein coating on red blood cells divides blood into four groups: A (A oligosaccharide is present),B (B oligosaccharide is present),AB (A and B oligosaccharides are present),O (neither A nor B, only their precursor H oligosaccharide present). A serum containing anti-A antibodies is mixed with some of the blood.

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Abstract – Physio -02

Physiology of memory

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For many years neurophysiologists have been attempting to discover exactly where in the brain the mechanism that is responsible for our ability to remember is situated. For several decades now neurophysiologists have extensively mapped the brain with electrical l recording devices and weak electric currents to map the pathways of the nerves of the brain, and they can now speak with some confidence of visual, auditory, and motor areas in the cerebral cortex. Much i s now understood about these processes, but the location of a special l area where memory resides, i f such a location indeed exists, remains still totally unknown. Physiologist describes two types of memory, short-term memory, and long-term memory. The terms are self-descriptive. I t appears that f o r a memory to become long-term, retained over a period of time, a system of registration, or fixation, has to occur. In short term memory the given fact s are not 'fixed' and therefore are not retained for remembrance later. This fact explains why, i n a traumatic situation incurring some brain damage, such as a concussion during an accident, the victim is unable to remember the events that immediately preceded the accident, although the long-term memory i s unaffected. The memories immediately prior to the accident had not become fixe d before the brain received the shock which stopped its operation temporarily, and so the memory i s los t forever. I t will most likely never return, the memory i s completely lost .Memory enables learning and sense of time: the vocabulary of memory is confusing and sometimes muddled. in general there are two ways of thinking about memory: 1.there is SHORT-TERM (immediate and working) and LONG-TERM MEMORY 2.there is DECLARATIVE ("propositional," "conscious," explicit, memories about "self") which can be recalled and consciously "declared") 3.NON-DECLARATIVE ("non-propositional," "non-conscious," episodic or procedural ... and skills (such as motor skills) derived from life experiences) MEMORY (which important to "general knowledge;" can be automatized; is important to non-associative learning and classical conditioning)

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Abstract – Physio -03

Physiology of ageing

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Aging is a process that begins at conception and continues for as long as we live. At any given time throughout our lifespan, the body reflects: its genetic component and its environmental experience. In other words, our bodies reflect our genetic capacity to adapt and repair, as well as the cumulative damage from disease processes. Aging highlights our strengths and our weaknesses. As a person grows old, organ function is challenged both by disease and by the physiological processes associated with ageing. In clinical geriatric medicine it is pathological change rather than decaying physiology which is the major cause of mobility and mortality. For example, age-related loss in muscle power is dwarfed by the motor disability precipitated by a cerebral infarction, although the former may be of some importance when attempting to rehabilitate the patient. Thus, a full diagnostic functional assessment in an individual elderly patient together with a rational approach to management needs to take account of the Changes that occur with aging fall into three categories: physical, psychological, and social. As changes begin to happen in one area of a person's life, most likely the other two will be affected as well. There is a wide variation among individuals in the rate of aging and, within the same person, different organ systems age at different rates. However, we all experience common changes to some degree. How we age can be a result of our diet, exercise, personal habits, and psychosocial factors. An important fact to remember is that biological age does not equal chronological physiological backdrop against which the diseases dealt with in this book occur. Evolutionary theory of ageing: Ageing is believed to have evolved because of the increasingly smaller probability of an organism still being alive at older age, due to predation and accidents, both of which may be random and age-invariant. It is thought that strategies which result in a higher reproductive rate at a young age, but shorter overall lifespan, result in a higher lifetime reproductive success and are therefore favored by natural selection. Essentially, ageing is therefore the result of investing resources in reproduction, rather than maintenance of the body (the "Disposable Soma" theory), in light of the fact that accidents, predation and disease will eventually kill the organism no matter how much energy is devoted to repair of the body. Various other, or more specific, theories of ageing exist, and are not necessarily mutually exclusive.

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Abstract – Physio -04

Fetal circulation

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The fetal circulation is the circulatory system of a human fetus, often encompassing the entire fetoplacental circulation which includes the umbilical cord and the blood vessels within the placenta that carry fetal blood. The fetal circulation works differently from that of born humans, mainly because the lungs are not in the fetus obtains oxygen and nutrients from the mother through the placenta and the umbilical cord. In the fetus, gas exchange occurs in the placenta. The fetal circulation is 'shunt-dependent'. Cardiac output in the fetus is defined in terms of combined ventricular output (CVO).The presence of fetal haemoglobin and a high CVO help maintain oxygen delivery in the fetus despite low oxygen partial pressures. The transition from fetal to neonatal life involves closure of circulatory shunts and acute changes in pulmonary and systemic vascular resistance. Shunt 1: The Ductus Venous :Oxygenated blood travels from the placenta via the umbilical vein and most of it bypasses the liver by way of the ductus venous. The ductus venous links the umbilical vein to the caudal vena cava and the flow of blood is controlled by a sphincter, enabling the proportion travelling to the heart via the liver to be altered. Shunt 2: The Foramen Ovale .The foramen ovale is an opening between the two atria enabling blood to be channeled directly into the systemic circulation thereby bypassing the lungs. The septum secundum directs the majority of the blood entering the right atrium through the foramen ovale into the left atrium. Here it mixes with a small volume of blood returning from the non-functional lungs via the pulmonary veins. Shunt 3: The Ductus Arteriosus: The ductus arteriosus connects the pulmonary artery to the aorta and allows equivalent ventricular function in the foetus. The blood from the right ventricle is pumped to the pulmonary trunk where, due to the high resistance in the collapsed foetal lungs, a larger volume passes through the ductus arteriosus to the caudal aorta. Most of the blood in the aorta is then returned to the placenta for oxygenation through the umbilical arteries. The ductus arteriosus empties blood into the aorta after the artery to the head has branched off thus ensuring that the brain receives well-oxygenated blood. As soon as the baby is born, the foramen ovale, ductus arteriosus ductus venosus and umbilical vessels are no longer needed. The sphincter in the ductus venosus constricts, so that all blood entering the liver passes through the hepatic sinusoids. Occlusion of the placental circulation causes an immediate fall of blood pressure in the IVC and right atrium.

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Abstract – Physio -05

Cardiovascular function in Space

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Changes in orthostatic heart rate have been noted universally in Soviet and U.S. crewmembers post space flight. The magnitude of these changes appears to be influenced by mission duration, with increasing orthostatic intolerance for the first 7–10 days of flight and then a partial recovery in the orthostatic heart rate response. Fluid loading has been used as a countermeasure to this post flight orthostatic intolerance. Previous reports have documented the effectiveness of this technique, but it has also been noted that the effectiveness of volume expansion diminishes as flight duration exceeds one week. The response of carotid baroreceptor function was investigated utilizing a commercially available neck collar which could apply positive and negative pressure to effect receptor stimulation. Bed rest studies had validated the usefulness and validity of the device. In these studies it was shown that carotid baroreceptor function curves demonstrated less responsiveness to orthostatic stimulation than control individuals. Twelve Space Shuttle crewmembers were examined pre- and post-flight from flights lasting from 4–5 days. Plots of baroreceptor function were constructed and plotted as change in R-R interval vs. carotid distending pressure (an orthostatic stimulus). Typical sigmoidal curves were obtained. Post flight the resting heart rate was higher (smaller R-R interval) and the range of R-R value and the slope of the carotid sigmoidal response were both depressed. These changes were not significant immediately post flight (L+O), but did become significant by the second day post flight (L+2), and remained suppressed for several days thereafter. It is hypothesized that the early adaptation to space flight involves a central fluid shift during the initial days of flight, but subsequent alterations in neural controlling mechanisms (such as carotid baroreceptor function) contribute to orthostatic intolerance. After space missions, astronauts' heart rates may increase inordinately with standing, their arterial pressures may decline, and they may even experience frank syncope.

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Abstract – Physio -06

Mystery of PQRST

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The normal ECG is composed of a P wave, a QRS complex and a T wave. The P wave represents atrial depolarization and the QRS represents ventricular depolarization. The T wave reflects the phase of rapid repolarization of the ventricles. The P wave is the first wave of the electrocardiogram and represents the spread of electrical impulse through the atrial musculature (activation or depolarization). The norms for this are the duration of not more than 0.11 seconds, amplitude of not more than 3mm in height and gently rounded, not pointed or notched. The normal deflection of the P wave is upright (positive) in leads I, II, and aVf. The deflection in AVl, and V3 to V6 are normally negative or biphasic, but may be positive. In leads III, V1 and V2 the deflection may be upright, biphasic, flat or inverted (negative) dependent upon the position of the heart in the body and the orientation of the leads. The P wave is normally inverted in lead aVr. There are several abnormalities that should be noted. They are Inversion in leads where the P is normally upright or the presence of an upright P wave in aVr. This change is often found in conditions where the impulse travels through the atria via an abnormal pathway, such as ectopic atrial or A-V nodal rhythms. Increased Amplitude usually indicates atrial hypertrophy and is found especially in A-V valvular disease, hypertension, cor-pulmonale, and congenital heart disease. Increased Width often indicates left atrial enlargement or diseased atrial muscle.Biphasity is a notable sign of left atrial enlargement when the second half of the P wave is significantly negative in leads III and V1.Notching in P-Mitrale the P often is wide and notched and is taller in lead I than in lead III. Notching is considered significant when the distance between peaks is greater than 0.04 seconds. Peaking indicates right atrial strain. These tall pointed P waves are often taller in lead III than in lead I. This is known as P-Pulmonale. Absence of P waves occurs in A-V nodal rhythms and S-A Block. The PR interval is measured from the beginning of the P wave to the beginning of the QRS complex. It reflects the time taken by the impulse to travel the entire distance from the SA Node to the ventricular muscle fibers. The normal duration for this is 0.12-0.20 seconds. A prolonged interval, beyond normal limits (0.12-0.20 sec.), is considered evidence of AV block. An abnormally short P-R interval is cause for alarm as it is often seen in association with hypertension and paroxysms of tachycardia. The P-R interval is shortened when the impulse originates in the AV node rather than the SA node or when the passage of the impulse to the ventricle is accelerated as in Wolff-Parkinson-White syndrome (WPW). Probably the most important complex in the electrocardiogram is the QRS

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Abstract – Physio -07

Mitral Valve Defect

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The mitral valve is the most complex of the heart's 4 valves and is the one most commonly associated with disease. There are 3 main conditions that affect the valve: Obstruction (stenosis), leakage (regurgitation), and bulging backward during valve closure (prolapse). Prolapse is the most common, occurring in up to 5% of the population, whereas stenosis is the least common, accounting for less than 1% of cardiac diagnoses in the United States, although it is more frequently seen in developing nations. Experienced physicians can frequently make at least a preliminary diagnosis of mitral valve defects by listening to heart sounds with the stethoscope. Echocardiography (ultrasound) is particularly well suited to diagnosing mitral valve disorders. It can give useful guidance for determining what type of treatment will be optimal and can be used to periodically assess the effectiveness of any treatment. This article deals with three types of mitral valve disease: mitral stenosis, mitral regurgitation, and mitral valve prolapsed. Mitral stenosis (MS) refers to narrowing of the mitral valve orifice, resulting in impedance of filling of the left ventricle in diastole. It is usually caused by rheumatic heart disease. Less common causes include severe calcification of the mitral annulus, infective endocarditis, systemic lupus erythematosus, rheumatoid arthritis, and carcinoid heart disease. Patients with mitral stenosis may present with exertional dyspnea, fatigue, atrial arrhythmias, embolic events, angina-like chest pain, hemoptysis, or even right-sided heart failure. Previously asymptomatic or stable patients may decompensate acutely during exercise, emotional stress, pregnancy, infection, or with uncontrolled atrial fibrillation. Mitral regurgitation (MR) is leakage of blood from the left ventricle into the left atrium during systole. It is caused by various mechanisms related to structural or functional abnormalities of the mitral apparatus, adjacent myocardium, or both. Mitral valve prolapse (MVP) is the systolic billowing of one or both mitral leaflets into the left atrium during systole. It may occur in the setting of myxomatous valve disease or in persons with normal mitral valve leaflets. Disorders of the mitral valve are the most common of the valvular heart diseases.

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PHYSIOLOGY
POSTER PRESENTATIONS

Abstract – Physio -01

Cardiac Cycle

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Cardiac cycle is the term used to describe the relaxation and contraction that occur, as a heart works to pump blood through the body. Heart rate is a term used to describe the frequency of the cardiac cycle. It is considered one of the four vital signs. Usually it is calculated as the number of contractions (heart beats) of the heart in one minute and expressed as "beats per minute" (bpm). When resting, the adult human heart beats at about 70 bpm (males) and 75 bpm (females), but this rate varies between people. However, the reference range is nominally between 60 bpm (if less termed bradycardia) and 100 bpm (if greater, termed tachycardia). Electrical Activity of the HeartThe heart's rhythm of contraction is controlled by the sinoatrial node (SA node), often called the pacemaker. This node is part of the heart's intrinsic conduction system, which is made up of specialized myocardial cells called nodal cells. The heart will beat without input from the nervous system and will continue to beat, even outside the body, as long as its cells are alive. The automatic nature of the heartbeat is referred to as automaticity. Automaticity is due to the spontaneous electrical activity of the SA node. Electrical impulses generated from the SA node spread through the heart via a nodal tissue pathway that coordinates the events of the cardiac cycle.Resting heart rates can be significantly lower in athletes, and significantly higher in the obese. The body can increase the heart rate in response to a wide variety of conditions in order to increase the cardiac output (the amount of blood ejected by the heart per unit time). Exercise, environmental stressors or psychological stress can cause the heart rate to increase above the resting rate. The pulse is the most straightforward way of measuring the heart rate, but it can be deceptive when some strokes do not lead to much cardiac output. In these cases (as happens in some arrhythmias), the heart rate may be considerably higher than the pulse. Every single 'beat' of the heart involves three major stages: atrial systole, ventricular systole and complete cardiac diastole. Throughout the cardiac cycle, the blood pressure increases and decreases. As ventricles contract the pressure rise, causing the AV valves to slam shut.

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Abstract – Physio -02

Nanotechnology in Physiology

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Nanotechnology is considered to be an emerging, disruptive technology that will have significant impact in all industrial sectors and across-the-board applications in cancer research. There has been tremendous investment in this area and an explosion of research and development efforts in recent years, particularly in the area of cancer research. At the National Institutes of Health, nanomedicine is one of the priority areas under its Roadmap Initiatives. These tools will provide the means to analyze, understand, and precisely control the molecular machinery of the human body. This will allow for the detection and correction of any undesired structural changes (disease or aging) at the finest level of detail and the earliest possible time. Genuine rejuvenation followed by the indefinite maintenance of an optimal physiologic state, or molecular homeostasis, may ultimately become possible. Current progress is rapid and accelerating, with a wide array of early nanoscale medical technologies under active development at the present time. Moreover, in 2005 the National Cancer Institute alone committed $144.3 million over 5 years for its Alliance for Nanotechnology in Cancer program. Much research and development is progressing in the areas of cancer diagnostics, devices, biosensors, and microfluidics, but this review will focus on therapeutics. Current nanotechnology platforms for cancer therapeutics encompass a vast array of nanomaterials and nanodevices. This review will focus on six of the most prominent and most widely studied: nanoshells, carbonnanotubes, dendrimers, quantum dots, superparamagnetic nanoparticles, and liposomes. All of these nanotechnology platforms can be multifunctional, so they are frequently touted as bsmartQ or bintelligent.Q This review will discuss the shared approaches in the design and development of these nanotechnology platforms that bestow such characteristics to the nanoparticles. Finally, the review will raise awareness of the physiological challenges for the application of these therapeutic nanotechnologies, in light of some recent advances in our understanding of tumor biology.

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Abstract – Physio -03

Alcoholics Beware

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Alcoholic liver disease (ALD)—ranging from alcoholic fatty liver to alcohol induced liver fibrosis and cirrhosis—accounts for more than 50% all chronic liver disease in industrialized countries and was responsible for over 25,000 deaths in the U.S. alone in 2005. An alcoholic beverage is a Alcoholic beverages are a source of food energy Studies have shown that while all heavy drinkers display signs of hepatitis steatosis (fatty liver), only 10% to 35% of alcoholics develop hepatic inflammation, with up to 20% progressing to cirrhosis. A new study by German researchers found that a variation in the PNPLA3 (adiponutrin) gene was associated with cirrhosis of the liver and elevated transaminase (liver enzyme) levels in alcoholic Caucasians. The risk of cirrhosis in alcoholics in the genetic high risk group might be as high as 25 to 50%. Full findings are published in the January 2011 issue of Hepatology, a journal of the American Association for the Study of Liver Diseases. Further medical evidence suggests a link between PNPLA3 gene variation and liver fat content; specifically the single nucleotide polymorphism (SNP) rs738409 was reported previously to be associated with advanced alcoholic liver disease in alcohol-dependent individuals of European and Native American descent. In the ingestion of an alcoholic beverage, the alcohol is rapidly absorbed in the gastrointestinal tract (stomach and intestines) because it does not undergo any digestive processes; thus, alcohol rises to high levels in the blood in a relatively short time. From the blood the alcohol is distributed to all parts of the body and has an especially pronounced effect on the brain, on which it exerts a depressant action.

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Abstract – Physio -04

Black Widow Spiders and Neuro Muscular Junction

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Black widow spider venom: causes a complete depletion of acetylcholine: there is initial spasms and then paralysis. The most striking action of black widow spider venom on both excitatory and inhibitory neuromuscular junctions of the American cockroach is presynaptic, like the action previously reported for vertebrate neuromuscular junctions. As indicated by post-junctional miniature excitatory and inhibitory endplate potentials, the rate of spontaneous transmitter release increases greatly after venom application and then decreases to zero, at which time the junctions are permanently blocked. The resting potentials of the muscle fibers and the sizes of the last miniatures that occur are essentially unchanged. That the venom also has a post-synaptic action is indicated by 1–2 mV fluctuations of the muscle membrane potential that occur almost immediately after venom application and before there has been any massive release of transmitter. Botulin acts by suppressing the release of acetylcholine, whereas the venom from a black widow spider (alpha-latrotoxin) has the reverse effect. ACh inhibition causes paralysis. When bitten by a black widow spider, one experiences the wastage of ACh supplies and the muscles begin to contract. If and when the supply is depleted, paralysis occurs. A black widow spider bite is said to feel like a pinprick, although victims may not realize that they have been bitten. Sometimes double fang marks may be seen at the location of the bite. The most common localized symptoms of a black widow spider bite are immediate pain, burning, swelling, and redness. Generalized symptoms of bites from black widow and brown recluse spiders may include: fever, nausea, vomiting , headache, abdominal pain, joint pain or stiffness, overall feelings of malaise, rash, and muscle cramping or tension. While black widow spider bites are hardly ever fatal, rare deaths have occurred from brown recluse spider bites and are more common in children than in adults. Treatment which include anti-venoms: For severe cases, Intramuscular or Intravenous, Horse serum: Require sensitivity testing, usually venom of all Latrodectus species, Benefit not definitely better than placebo, Calcium gluconate for muscle spasms, Local: Cleansing; Ice packs.