



PREVALENCE OF MUCOSAL HYPERPLASIA IN THE APPENDIX AND ANALYSIS OF ITS HISTOLOGICAL FEATURES AND CAUSATIVE FACTORS

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ABSTRACT

Mucosal hyperplasia of the appendix was first described by MacGillivray. Hyperplastic lesions of the appendix appears either as hyperplasia and hyperplastic polyps. In the present study the incidence and causative factors for mucosal hyperplasia in the appendix. A total of 372 appendectomy specimens were studied by normal H& E staining. A typical appearance of mucosal hyperplasia was observed in 27 cases out of 372 cases of appendectomy. The mean age of the patients was 48.7 years and the ratio between male and female was 1: 1.2. Out of 27 cases, almost all the cases lumen was obstructed and the presence of lymphocytes and eosinophils in the lamina propria of the appendix was observed. This indicates the chronic inflammation with allergic reaction leading to mucosal hyperplasia of the appendix, since the hyperplasia is a benign process.

KEYWORDS: Appendectomy, Mucosal hyperplasia., Lumen Obstruction., Faecolith



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INTRODUCTION

The mucosa of the appendix is similar to that of the large bowel, except for a greater representation of lymphoid tissue which is particularly prominent during adolescence. Microscopically, the epithelium contains absorptive cells, goblet cells, neuroendocrine cells and very few Paneth cells¹. Hyperplasia is an increase in the amount of organic tissue results from cell population. Hyperplastic lesions of the appendix appears either as hyperplasia and hyperplastic polyps. Mucosal hyperplasia of the appendix was first described by MacGillivray.² and the proliferation of epithelial cells arranged in delicate papillary structures with prominent glandular infoldings having a saw-toothed or serrated configuration and showing both architectural and cytological dysplasia. These lesions are grossly unremarkable and detected only by microscopic examination. They were always limited to the mucosa. A definite tendency for progressive cytologic differentiation towards the free surface will be present. Mitotic figures were numerous in the basal area, scanty in the mid-portion, and absent in the apical region. Hyperplastic polyps are localized sessile masses involving appendiceal circumference. Superficial epithelial serration taper to a narrower base and lack dysplasia. In contrast hyperplasia is more common and consists of non polypoid hyperplasia affecting the mucosa. Both lesions demonstrated elongated tubules with serrations. Mucosal hyperplasia in the appendix is analogous to that of either a hyperplastic or a serrated colorectal polyp of large intestine³⁻⁵. Most of the mucocoeles are secondary to hyperplastic or neoplastic alterations of the appendiceal lining epithelium.^{6-7, z}

AIM

The present study is to know the incidence and causative factors for mucosal hyperplasia in the appendectomy specimens.

MATERIALS & METHODS

In this retrospective study, a total of 372 appendectomy specimens received from the department of Pathology of Shri Sathya Sai Medical College & Research Institute during a period of 4 years (2011- 2014) were studied. All tissues were fixed in 10% formalin, embedded in paraffin, and 5 micron thick sections were stained with hematoxylin and eosin. In all the cases, two sections were utilized, (one section from distal end and one from the proximal end were taken for microscopic examination). The mucosal hyperplasia was differentiated from the other pathological conditions by the description provided by MacGillivray and Higa et al. Statistical evaluation of the results was carried out. The present study has got the clearance from Institutional Ethical Committee (IEC) of SSSMC&RI. Statistical evaluation was performed by using ANOVA test with the help of IBM SPSS 20 version software.

RESULTS

372 cases of appendectomy specimens were observed. Out of 372 cases 27(7.25%) showed presence of mucosal hyperplasia in (figure No-1). The mean age of the patients was 48.7 years and the ratio between male and female was 1: 1.2. Out of 27 cases, 16 cases of chronic inflammation, 8 cases of acute inflammation, 2 cases of sub acute inflammation and 1 normal (as it was an incidental appendectomy specimen) were seen (Table No -1). Out of 27 cases, in 08 cases lumen was occupied by the tissue debris and necrosed material, one case showed the presence of both faecolith and mucous material, 4 cases showed the presence of only mucous material with dilatation of the lumen of the appendix, 13cases had faecolith and in one case lumen was empty (Table No- 2).

Table No 1

Diagnosis of appendix specimens

Total no of cases showing hyperplastic epithelium – 27			
Recurrent appendicitis	Acute appendicitis	Subacute appendicitis	Normal
16 cases	8 cases	2 cases	1case

Table No 2

Appendix lumen details

Total no of cases showing hyperplastic epithelium – 27				
Lumen occupied by faecolith	Lumen occupied by Tissue debris	Lumen occupied by Mucous material	Lumen occupied by faecolith&mucous material	Empty lumen
13 cases	08 cases	4 cases	1case	1 case

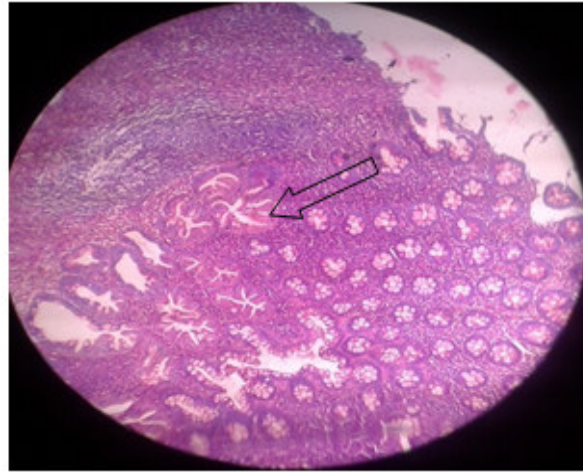


Figure1

Epithelium showing the hyperplasia with serrated appearance

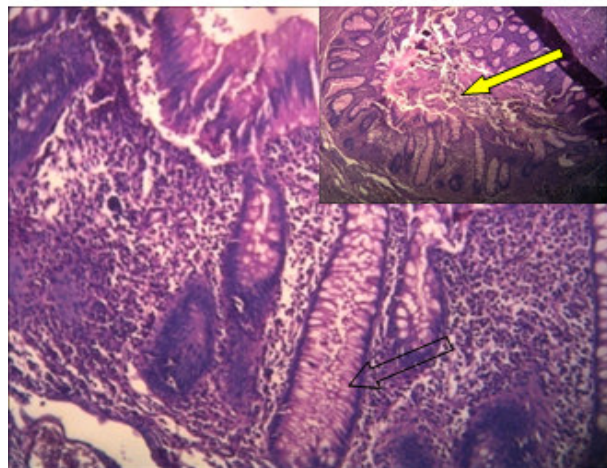


Figure 2

The lumen of the appendix showing the presence of faecolith and the hyperplasia of the mucosa

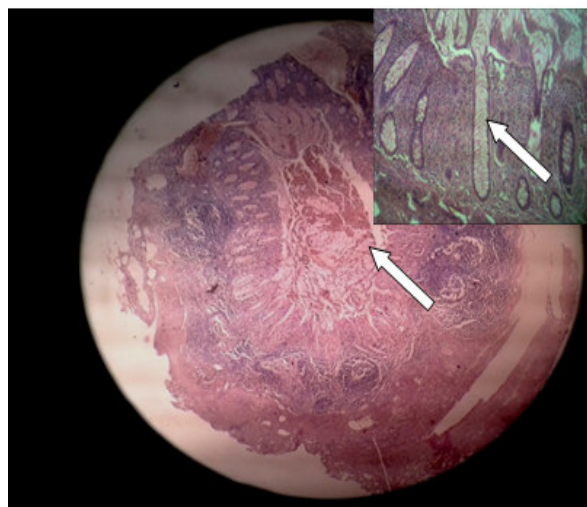


Figure 3

The lumen of the appendix showing the presence of faecolith and the hyperplasia of the mucosa

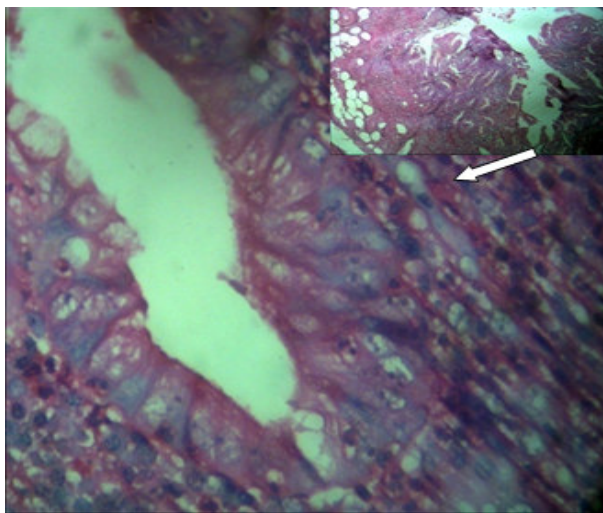


Figure4
The lamina propria present beneath the epithelium showing the presence of eosinophills, lymphocytes and Neutrophills.

DISCUSSION

Higa et al⁸ designated the term mucosal hyperplasia of the appendix. This is an entirely benign process, always asymptomatic and usually detected in microscopic observations and the gross changes are easily overlooked. They never associated with peritoneal implants and appendectomy is curative in every instance. M.Younes et al¹⁰ reported 24 of 273 appendectomies (8.8%) exhibited the presence of mucosal hyperplasia and, of these; six cases (25%) also were associated with adenocarcinoma of the colon. In the present study, the mucosal hyperplasia of the appendix was observed in 27 cases (7.25%) out of 372 appendectomy cases. No gross changes were observed in the specimens but microscopic examination alone revealed the presence of hyperplastic epithelium. On microscopic examination only we observed the presence of the hyperplastic epithelium in appendix. According to Appleman⁹ the mucosal hyperplasia of the appendix is identical to hyperplastic polyps of the colon except the absence of thickening of the underlying basement membrane which will be present in the hyperplastic polyp of the colon. M. Younes¹⁰ et al in their study of 40 cases of mucosal hyperplasia, they didn't observe any significant thickening of the underlying basement membrane. In the present study similarly we didn't observe any significant thickening in the basement membrane. David k. Driman¹¹ informed that the hyperplastic polyps are one of the major factor which will cause the mucocoeles by causing the epithelial lesions associated with excess of mucin production and minority of the mucocoeles are called obstructive mucocoeles when they show mucous distension secondary to obstruction of the appendix. The obstruction can be due to fecaliths, post inflammatory scarring etc. In the present study, 5 cases showed the presence of mucous material, in these 5 cases in one case lumen contained both mucous material with faecolith. M.Younes¹⁰ observed in 8.8% of appendectomies presence of mucosal hyperplasia and the mean age of the patients was 59.5 years (range: 30-84 years) and the M:F ratio was 1:1.7. In the

present study 7.3% of appendectomy specimens showed mucosal hyperplasia and the mean age of the patients was 29.6 years and the M: F ratio was 1:1.2. The appearance of mucosal hyperplasia in the appendix is similar to hyperplastic polyp of the colorectum. The luminal portion had saw tooth appearance, nuclei were small, regular and basal and bases of the crypts showed proliferative changes. In the present study we follow up the patients for two years and with the available data mucosal hyperplasia of the appendix was not associated with adenocarcinoma or any malignancy of the colon. In the previous studies they didn't mention about the causative factors for the mucosal hyperplasia of the appendix but they mentioned that the mucosal hyperplasia of appendix leads to excess amount of mucin production and formation of mucocoele slowly obliterating the lumen and lead to appendicitis. In the present study, all the cases showed obliteration of the lumen either by the presence of faecolith, (Fig No- 5) necrotic material and tissue debris (Fig No -4), and mucous material. The presence of lymphocytes, eosinophills along with the neutrophills in the lamina propria (Fig No - 6) revealed chronic irritation with allergic reaction leading to mucosal hyperplasia of the appendix. They were also associated with neuronal hyperplasia.

CONCLUSION

In the present study the incidence of mucosal hyperplasia is 7.2%. Out of 27 cases 18 cases (67%) lumen obstructed by faecolith & mucous material and 59% cases were belong to chronic inflammation. Therefore the obstruction of appendicular lumen causing chronic irritation to appendicular epithelium and with the allergic reaction in the lamina propria with the presence of eosinophills and neutrophills leading to mucosal hyperplasia of appendix since the hyperplasia is benign process.

CONFLICT OF INTEREST

Conflict of interest declared none.

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