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Histomorphological Study of Appendicectomy Specimens at a tertiary care centre – A two year retrospective Study

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ABSTRACT

Appendicitis is the most common-intra-abdominal condition requiring emergency surgery, with a 7% lifetime risk. We have retrospectively studied the histomorphology of different disease process affecting the appendix over a period of two years from april 2016 to april 2014**.** The appendectomies done primarily for appendicular pathology, received at histopathology section of our department were included and those resected along with other organs like hysterectomy and colectomy specimens were excluded from the study.The tissues were processed in routine manner and paraffin embedded blocks were prepared. Serial sections of 4µm to 5µm were cut from the block and processed and stained with haematoxylin and eosin stains. Zeihl Neelson stain was done to confirm the presence of acid fast bacilli in one case. Pathological reports were analyzed for the following parameters: age, gender, and pathological diagnosis. A total of 116 specimens were analyzed. 44 % cases were males and 56% were females. The histopathological examination showed acute inflammation in 57.75% cases , chronic inflammation in 37.93% cases , granulomatous appendicities in 1 case .Parasites were found in 2 cases and carcinoid tumor in 1 case . The vermiform appendix continues to be frequently encountered surgical pathology specimen. Our knowledge about diseases of appendix, is far from complete. This organ therefore requires careful and systematic study both by the clinician and the pathologist**.**

Keywords: Appendicitis; appendicectomy; histopathology of appendix**.**

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INTRODUCTION

The vermiform appendix in humans is a rudimentary structure with no obvious function. It arises from the medial wall of the cecum and averages 6–7 cm in length and 0.7 cm in greatest diameter. The position of the appendix varies considerably; it may lie posterior to the cecum or ascending colon (its most common site), in the pericolic gutter, in front of or behind the terminal ileum, on the psoas muscle, or in the subhepatic region.[1]

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). Grossly, it has a yellowish tint. Foci of fresh hemorrhage are usually attributable to surgical trauma. Microscopically, the epithelium contains absorptive cells, goblet cells, neuroendocrine cells (mainly of Kulchitsky type and located at the base), and very few Paneth cells.[2] The submucosal, muscular, and serosal layers are qualitatively similar to their counterparts in the rest of the lower intestinal tract. Grossly, the serosa is smooth, glistening, and transparent. Hyperemia of surface vessels is usually related to surgical trauma. The mesoappendix, which is largely made up of adipose tissue, contains the appendiceal vessels.

Acute appendicitis is most common in adolescents and young adults, but may occur in any age group. The lifetime risk for appendicitis is 7%; males are affected slightly more often than females.[3] Despite the prevalence of acute appendicitis, the diagnosis can be difficult to confirm preoperatively and may be confused with mesenteric lymphadenitis (often secondary to unrecognized Yersinia infection or viral enterocolitis), acute salpingitis, ectopic pregnancy, mittelschmerz (pain caused by minor pelvic bleeding at the time of ovulation), and Meckel diverticulitis.[4]

Appendicitis is the most common – intra - abdominal condition requiring emergency surgery. Obstruction of the lumen is the dominant factor in acute appendicitis, and although fecoliths and lymphoid hyperplasia are the usual cause of obstructions, some unusual factors could also be involved.[5,12]

Urgent appendicectomy is the accepted treatment to prevent perforation. Despite the more recent advances in the laboratory tests, radiological examination, sonography, laproscopy, endoscopy all of which have claimed a place in the diagnosis of specific appendiceal pathologies, have had little effect on overall accuracy of diagnosis and management of disease processes in the organ. Hence, this organ requires careful and systemic study by both the clinician and the pathologist. The present retrospective study was undertaken with the following aims and objectives -

1. To study the patterns of lesions (non neoplastic and neoplastic) in the appendicectomy specimens.

2. To study the detailed morphological features of the different non-neoplastic and neoplastic lesions i.e. both benign and malignant.

MATERIALS AND METHOD

The present study was done retrospectively on surgically removed and autopsy specimens over a period of two years from April 2016 till April 2014 with approval from the institutional ethics committee. The clinical notes of the patients were reviewed from the histopathological forms and also collected from the patients coming for follow up. The specimens were fixed in 10% buffered formalin. A detailed gross examination of the appendicectomy specimens was carried out. Sections were taken for histopathological examination. Following the grossing of the specimens, tissue processing was done. The paraffin embedded blocks were retrieved and serial sections of 4 µm to 5 µm size were cut and processed. All the tissues were stained with haematoxylin and eosin stain. Zeihl Neelson stain were also done in granulomatous lesions..

RESULTS AND DISCUSSION

Table 1:

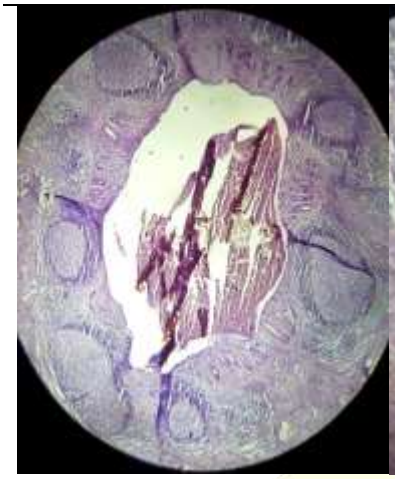
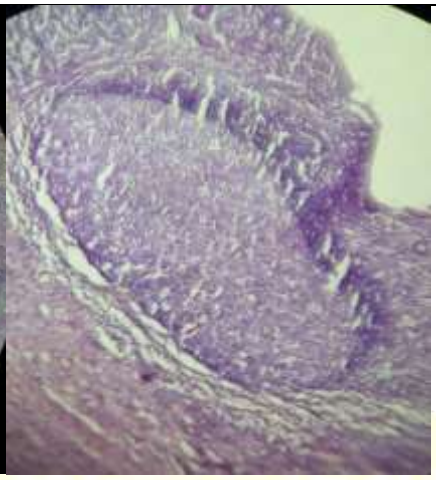
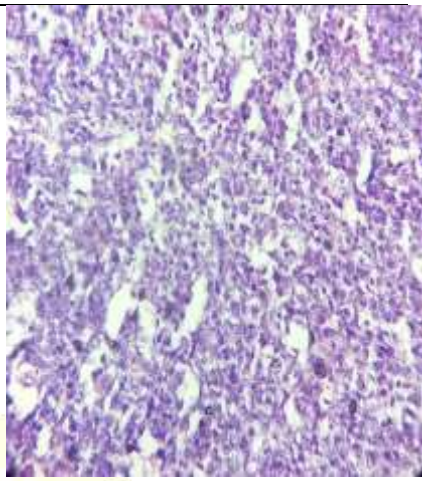
Lesions	**Age group**		**Total**	
	0 -19	**20 -39**	**Above 40**	
Acute appendicitis	20	37	10	67(57.75)
Chronic appendicitis	12	28	04	44(37.93)
Worm infestation	01	01	00	02(1.72)
Carcinoid	00	01	00	01(.86)
Granulomatous appendicitis	00	01	00	01(.86)
Acute eosinophilic appendicitis	00	01	00	01(.86)

Table 2:

Specimen	**No. Of cases**
Non neoplastic lesions	115
Neoplastic lesions	01

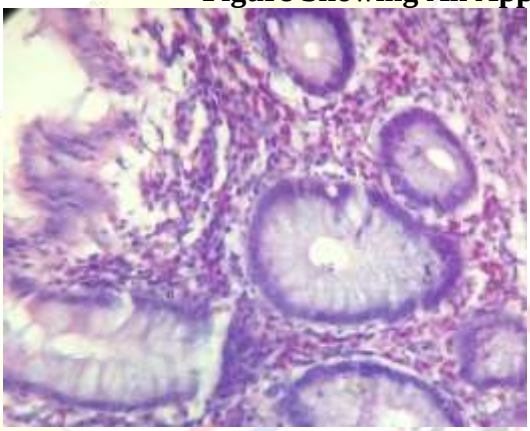
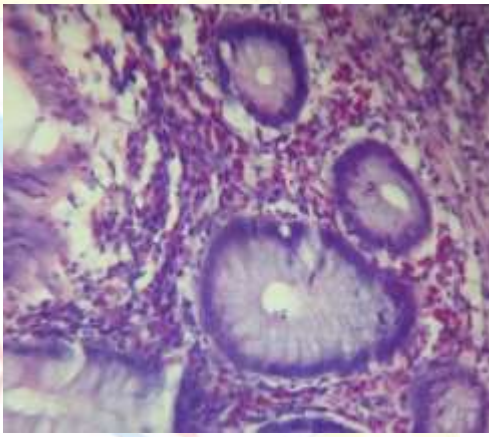
Table 3:

Symptoms	**No. of cases**	**%. of cases**
Generalized abdominal pain	90	77.58
Fever	50	43.10
Dyspepsia	45	38.79
Irregular bowel habits	30	25.86

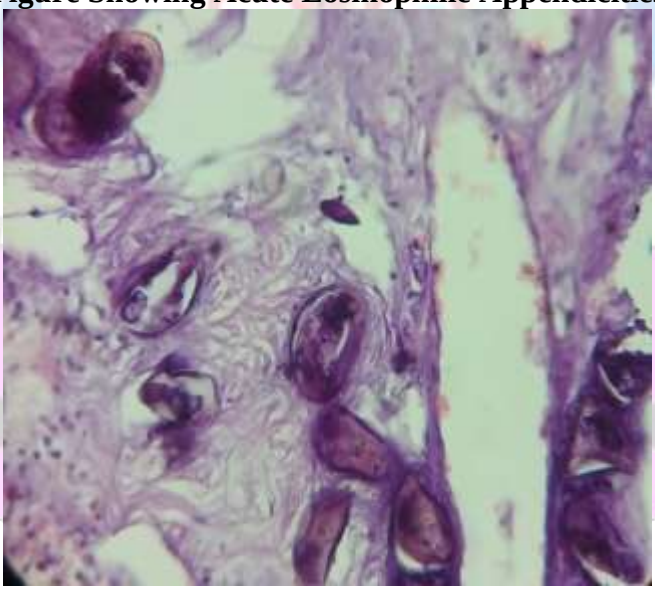
(Figure 1 -4x) **(Figure 2- 10x)** **(Figure 3 -40x)**

Figure Showing An Appendiceal Carcinoid .

(Figure 4-40x) **(Figure 5 -40x)**

Figure Showing Acute Eosinophilic Appendicities



(Figure 6 -40x)

Figure Showing The Presence Of Worms –Enterobious Vermicularis

DISCUSSION

A total of 116 cases were studied. Most of the patients were in their third or fourth decade of life. The youngest patient is a neonate 4 days old and the oldest patient is 75 years old. In our

study, females were affected more being 56% and males constitute 44%.Most of the patients presented with generalized pain abdomen (77.58%) and fever 43.18%,dyspepsia in 38.7% of cases and irregular bowel habits in 25.86% of cases. Zulfikar *et al*[6] in their retrospective study recorded 323 cases of appendectomy. Of these, 196(60.7%) were males and 127(39.3%) were females. The most common presenting symptom with which the patients sought hospital admission was right iliac fossa pain followed by generalized abdominal pain.

Grossly, fibrosis was the most common lesion found in 60% of cases. The most common lesion seen in males was acute appendicitis seen in 49% of cases whereas the most common lesion seen in females was chronic appendicitis seen in 38 %cases. Overall, acute appendicitis constituted 57.75% cases, chronic appendicitis constitute of 37.93 % of cases, carcinoid in 1 case, worm infestation in 2 cases and acute eosinophilic appendicities in 1 case. One case of granulomatous lesion seen in which the patient was a male of 28 years old. However, on Zeihl Neelson staining for tubercule bacilli, the report was negative for acid fast bacilli.

The histopathological examination of the appendix serves two purposes. First it allows the diagnosis of acute appendicitis to be confirmed; second, histopathological examination may disclose additional pathologies that may not be evident intraoperatively which may impact patient management. Majid *et al.*[7]studied 250 appendectomy cases and reported that mucosal congestion was the commonest finding seen in 218(87.2%) cases. In contrast, our study revealed fibrosis to be the most common gross finding. Acute appendicitis constituted the most common histopathological lesion for which appendectomy was done and was seen in 46.36% of cases. These findings are in agreement with those of Chang[8] , Blair *et al*[9] and Edino *et al*[5].Acute appendicitis with periappendicitis constituted the second most common lesion (29.1%) for which appendectomy was done. This finding is in agreement with our study which revealed acute appendicitis cases in 54% of patients. In contrast Mukherjee *et al.*[10] detected only 7.8% of acute appendicitis with periappendicitis histopathologically . Edino *et al.*[5] in their study reported 17% cases of chronic fibrosing appendicitis. Marudanayagam *et al.* [11] in their retrospective analysis of 2660 cases reported mucinous cystadenoma to be present in 0.6% of the cases.

Aravindan *et al* reported 8 cases of acute eosinophilic appendicitis . In our study, we found only one case of acute eosinophilic appendicitis. A diagnosis of carcinoid tumor was made in 1 case. Marudanayagam *et al* [11] also reported that most of the appendectomies (64.58%) were performed in the second decade of life. In our study, we found that most of the appendectomies were performed in the third or fourth decade of life. A greater percentage of

appendectomies (68.2%) were performed in males as compared to females (31.8%).In our study, females were affected more being 56% of cases and males constitute 44% of cases.

CONCLUSION

Routine pathological examination of appendectomy specimens is very essential. With advances in technology and imaging modalities, the diagnosis of acute appendicitis has improved, with a subsequent significant reduction in negative appendectomy. There are still a number of unusual diagnoses found in appendicectomy specimens supporting the continued use of routine histology.

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