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A histopathological study of unusual findings in appendectomy specimens in a tertiary care hospital of Andhra Pradesh

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ABSTRACT

Background: Acute appendicitis is sudden inflammation of the appendix, usually initiated by obstruction of the lumen. This results in invasion of the appendix wall by gut flora, and it becomes inflamed and infected.
Aim: To investigate retrospectivelythe prevalence and implications of unusual histopathological findings in appendectomy specimens from patients with suspected acute appendicitis.
Materials and Methods: This is retrospective assessment of hospital records of 150 patients who were diagnosed as acute appendicitis and underwent appendicectomy during March 2018 to February 2020 at Government Medical College, Bhagya Nagar, Ongole, Andhra Pradesh .Data of the patients were assessed based on age, sex, histopathological diagnosis, coexisting pathologies and uncommon findings on histology.
Results: According to histopathology report, negative for acute appendicitis were noted in 82 cases (55%), whereas positive for acute appendicitis in 68 cases (45.3%) . Rare findings were foundin 38 (55.8%) cases out of 68 cases. Parasites were found in 7 (18.4%) (Enterobius Vermicularis, Balantidum Coli, Schistosoma Haematobium), Mucocele in 12 (32%), carcinoid tumour in 8(21%), B cell malignant lymphoma in 2 (5%), leiomyoma in 2 (5%), Primary appendiceal adenocarcinoma in 3 (8%), Acute appendicitis with dysplastic changes in 2 (5%) and inflammatory bowel polyp was reported in remaining two cases(5%).
Conclusion: Even though unusualpathologies can be seen rarely during appendectomy, this should be kept in mind for further evaluation of each cases.

1. Introduction

Acute appendicitis is one of the most common medical emergency, and majority of cases are managed with emergency appendectomy.[1] This whole appendix removal not only permits for conclusive conclusion of the case but also considerably decreases the complications like perforation and sepsis. Though, the surgical technique itself is invasive, demonstrating added risks to the patient's morbidity and mortality. It also incur outstanding costs to the healthcare providers. Epidemiologic research hasdiscovered that the occurrence of acute appendicitis roughly matches that of lymphoid development, with the peak occurrence presenting between the ages of 10 and 30 years old. The most important causal factor of acute appendicitis appears to be increase of luminal obstruction. Apart from this, numerous factors have been implicated as causative etiologies of this basic feature, and demonstrating an age-related trend.[1–5] For example, lymphoid hyperplasia is the utmost common factor identified in young aged patients, while fecalith plugs are most common factor recognised in old aged patients. Other than these, several less recurrent causes have been recognised that indicated the suspicion of acute appendicitis with or without

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histopathologic evidence for acute appendicitis.[5] Hence, this retrospective study was planned show theuncommon findings in appendectomy specimens.

2. Materials and Methods

Patients' data was collected fromthe hospital records. A 150 patients (78 males and72 females), having mean age between 18-5 years and were diagnosed with acute appendicitis followed by appendicectomy during last two years (March 2018 to February 2020) at Government Medical College, Bhagya Nagar, Prakasam (Dt), Ongole, Andhra Pradesh were selected for the study. Operative case sheets were analysed to conclude main or coexisting operative results or any other main pathologies found. Histology reports were too analysed with reference to the diagnosis and uncommon results were recorded. The study procedure was obtained approval from Institutional ethics committee. All data were analysed by using SPSS 15 for Windows.Frequency and distribution of data were calculated.

3. Results

78 (52%) male and 72 (48%) female patients with mean age of 32 (14-65) years were selected for this study. Allpatients were clinically identified of having acute appendicitis with reference to physical and laboratoryexamination. 17cases (25%) of acute necrotizing appendicitis, 7 cases (10%) of acute phlegmonose appendicitis, 13 cases (18%) of acute appendicitis, 13 cases (18%) of obliteratedappendix vermiformis were reported. In 18 cases (28%) lymphoid hyperplasia was obtained.

According to histology report, negative for acute appendicitis were noted in 82 cases (55%), whereas positive for acute appendicitis in 68 cases (45.3%). Uncommon findings were determined in 38 (56%) cases. Parasites were found in 7 (18.4%) (EnterobiusVermicularis, Balantidum Coli, SchistosomaHaematobium), mucocele in 12 (21%), carcinoid tumour in 8(21%), B cell malignant lymphoma in 2 (5%), leiomyoma in 2 (5%), primary appendiceal adenocarcinoma in 3(8%), acute appendicitis with dysplastic changes in 2 (5%) and inflammatory bowel polyp was reported in remaining two cases (5%) ()).

Table 1: Patientcharactheristics and histopathologic diagnosis patients

Male	78 (52%)
Female	72(48%)
Mean age (range)	32(18-65)
Histopathological diagnosis	
Cases unconfirmed for acute appendicitis n= 82(55 %)	
Cases confirmed for acute appendicitis n=68 (45.3%)	

Table 2: Uncommon findings on histology (n=38).

Findings	**Patients No (%)**
Parasites (Enterobiusvermicularis, Balantidium coli, Schistosomaheamatobium)	7 (18.4%)
Mucocele	12(32%)
Carcinoid tumor	8(21%)
B cell malignant lymphoma	2 (5%)
Leiyomyoma of the appendix	2(5%)
Primer appendiceal adenocarcinoma	3 (8%)
Dysplastic changes	2 (5%)
Inflammatory bowel polyp	2(5%)
Total	38 (100%)

4. Discussion

Acute Appendicitis is the common surgical crisis that affects teenagers though it can occur at any age group people. The majority of cases the pathology will be luminal obstruction which is due to rise in intra-luminal pressure within the appendix, and that causes ischemia. Bacteria translocate could cause inflammation, Infarction and perforation. Many typical and atypical etiologies may lead to appendiceal lumen obstruction.[6] An outline of stated histopathological results is deliberated in our manuscript.

The atypical findingsin appendectomy specimens are intestinal worms or malignant or benign tumors.[1] In our study, the records of appendicectomies were analysed to ascertain primary or coexisting pathologies andhistology reports were also examined for thediagnosis & any uncommon findings were collected.

There are some atypical etiologic factors identified tobe fecoliths and lymphoid hyperplasia, appendicitiscan be due to parasitic infestation also. Earlier reports of E. vermicularis incidence in appendectomy specimens were ranged from 0.2% to 41.8%.[7]

Enterobius vermicularis was found in 3 cases in the present study and nobody had acuteappendicitis on histology.

Schistosomiosis is a trematod infestation. It is most common parasitic diseases in the world. Scistosomia haematobium was implicated as the causative agent of a granulomatous inflammatorystate associated with eosinophilia and fibrosis.[8] Though,Schistosomiosis of the appendix was first discovered by Turner et al in 1909, however ,the actual role of schistose malinfestation as a relatedreason for appendicitis isstill open to debate. This diagnosis should be done in patients staying in tropical areas having acute appendicitis or recurrent abdominal pain.[9]

Balantidium coli was found in one (1) case in this study, so that it is difficult to make any remark on its causative role in thepathogenesis of appendicitis.

Neoplasms of the appendix are not common and typically diagnosed during operation or autopsy. In conventional study of 71000 appendicectomy specimens,

Collins discovered 958 malignant and 3271 benign tumors with an overall occurrence of 4.6% for benign lesions and 1.35% for the malignancy.[10]

Benign tumors of appendix are leiomyomas, neuromas andlipomas. Malignant tumors of the appendix are carcinoids, mucoceles and adenocarcinomas. In this study, seven (7) cases with neoplasm in appendix were observed.

Commonest mucinous epithelial neoplasm of the appendix will form mucoceles that reveal obviouscystic dilatation of the lumen with or without muralcalcification. The underlying pathology may be ahyperplastic polyp, a benign neoplasm, such as cystadenoma, or a malignant tumor such ascystadenocarcinoma. The diagnosis of appendiceal mucocele is approximately never made preoperatively. In some cases mucocele is visualised by either computerized tomography (CT) or ultrasonography, though other cystic lesions of the peritoneal cavity, such as ovarian cyst, mesenteric andomental cysts which might have a similar radiological picture. These lesions are almost always foundduring appendicectomy and complicate about 0.3%of all appendicectomies.[11] A female to male ratio was found to be 4 to 1, with a mean age of presentation being 55 years.[12] This study found 12mucocele cases. All were females of mean age about 35 years revealing that it might also be found in an previous periodof life.

Carcinoids are more regularly diagnosed incidentally after an operation for acute appendicitis and occasionally during other techniques. In the study of Collins, carcinoid made up 51% of the malignant tumors of the appendix. Our study showed three(3) patients. Diagnosis was established after appendicectomy and histologic examination.

Leiomyomas of the small intestine are benign tumors coming from smooth muscle in the intestinal wall. 40% to 50 % of the cases have bleeding or intestinal obstruction. Characteristically, these lesions undertake central necrosis and could cause hemorrhage into the necrotic tissue . Prompt management is warranted which comprises segmental resection. Though the actual rate of incidence of leiomyoma in acute appendicitis is unknown, it was only present in 1 case in our study.

Gastrointestinal tract is the most frequently involved extra-nodal place of Hodgkin's lymphoma. Gastrointestinal tract diseases account for 4-20% of all non-hodgkin lymphoma (NHL) and 30-45% of extra-nodal cases. Normal age for the association of gastrointestinal tract is 55 years and is additional commonly seen in men. Majority of the appendiceal lymphomas occur in the Non-Hodgkin type (especially B cell in origin). Primary lymphomas of the appendix were accounted for 11 of 71000 appendectomies by Collins et al in 1963.[10]Lewin et al. Showed that in one case out of the seventy-nine cases of gastrointestinal lymphomas.[13] d'Amore et al. documented appendiceal primary lymphomas in 306 gastrointestinal lymphoma patients.[14] As it is rare, the CT findings could be used for a preoperative diagnosis.[15] Present studyshowed B cell lymphoma in two cases of the specimens.

Primary adenocarcinoma of the appendix is an extremely rare tumor, with less than 300 of these lesions explained in the world literature. This tumor is mainly common in people aged between 50-55 years. Adenocarcinomas act violently and in a crazy related to that of colonic adenocarcinomas, so they must be managed with the same violent approach.[9] In this study 3(8%) male patients with an age of68 years was found. Initially, was treated by appendicectomy but after the histology report came a right hemicolectomy was performed.

To the best of our information, this is the first retrospective study that explains specifically atypical changes of histopathological findings with a probable diagnosis of acute appendicitis in Andhra Pradesh of south India. This study has been performed in a tertiary care hospital where cases were retrospectively reviewed to endorse these rare findings. Our findings concurrent with research studies from other parts of world.

5. Conclusion

It is obvious that yet when the macroscopic presence of a removed appendix is normal, histopathological examination of specimens will allow early diagnosis of malignancy or infectious diseases. The clinical importance of recognising these atypical findings will guide the clinical outcome of these cases by necessitating additional surgical management and adding chemotherapy for malignant cases or for treating anthelmintic drugs.

6. Conflict of Interest

The authors declare that there are no conflicts of interest in this paper.

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None.

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