Journal Homepage: -www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI:10.21474/IJAR01/16034
DOI URL: http://dx.doi.org/10.21474/IJAR01/16034

RESEARCH ARTICLE

HISTOPATHOLOGICAL STUDY OF APPENDICULAR SPECIMEN OVER A PERIOD OF 2 YEARS

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Manuscript Info

Manuscript History
Received: 15 November 2022
Final Accepted: 18 December 2022
Published: January 2023

Key words:-
Acute Appendicitis, Appendectomy, Histopathological Study

Abstract

Background: Pathologic evaluation of the appendix after appendectomy is routine and can occasionally identify unexpected findings.

Objective: The aim of the present study was to determine the incidence and type of pathologic diagnoses found in appendectomy specimens at our institution.

Material and Methods: The clinicopathological data of 386 patients who underwent appendectomies for presumed acute appendicitis from January 2021 to december 2022 were reviewed retrospectively. There were 220 men and 166 women (sex ratio M/F=1.3) aged between 5years and 65 years. All patients underwent appendectomy (either open or laparoscopic).

Conclusion: The routine histopathological examination of the appendix is of value for identifying unsuspected conditions requiring further postoperative management.Gross examination alone does not appear to be a good indicator of an unexpected finding on microscopicexamination. It is recommended that in order to avoid misdiagnoses, all appendices should be histopathologically examined.

Introduction:-

Acute appendicitis is the most common non accidental surgical emergency worldwide [1]. Acute appendicitis is mostly treated with appendectomy and an appendectomy is a routinely performed surgical procedure worldwide. There is a rise of appendicitis cases in India especially among urban population due to acceptance of western pattern of diet [2]. Histological examination revealed that about 20% of patients who have undergone appendectomy do not have acute appendicitis [3]. This is more commonly seen in females. Presenting symptoms of acute appendicitis includes pain in the right iliac fossa, vomiting, fever, tenderness, guarding and rebound tenderness. Appendectomy is the preferred mode of treatment in these cases; however, misdiagnosis is not uncommon. Very commonly, appendicitis is misdiagnosed in non-pregnant women of child-bearing age. Wrong diagnosis leads to surgical removal of normal un-inflamed appendix in many cases.[4]. Acute appendicitis is uncommon in infants, and it reaches a peak incidence in teens and early twenties [5]. In young adults, the ratio of acute appendicitis among males and females is 3:2 and with increasing age, the greater incidence among males decreases. The most common cause

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of appendicitis is obstruction to the lumen; causes include faecolith, lymphoid hyperplasia and foreign bodies [6]. There are also some uncommon factors and includes parasitic infestations like enterobius, ascariasis, tuberculosis or a tumor as carcinoid, primary or secondary adenocarcinoma, lymphoma, gastrointestinal stromal tumor etc [7]. The gold standard method for confirmation of acute appendicitis is the Histopathological examination of resected specimen and it is also to rule out any underlying uncommon pathology. So, the study was undertaken to with an aim to determine the histopathological diagnosis of all resected appendix.

Material And Methods:-

This 2-years retrospective study was conducted in the Department of General surgery of a Basaveshwar Teaching and General Hospital, Kalaburagi. All patients regardless of age who underwent emergency appendectomies, interval appendectomies and incidental appendectomies for any reason and whose histopathological examinations were done; included in the study. Study period of the study was January 2021 to December 2022. Total 386 appendectomy cases were included in the study. In every case, clinical and demographic data were recorded. HP slides were retrieved from the archive and HP reports were collected from records. The reports were collected and data were analysed regarding incidences of age, sex, and other co-incidental findings. The final histopathological reports were correlated with the pre-operative clinical diagnosis.

Result:-

A total of 386 patients underwent appendicectomy over a period of 2 years in the Department of General surgery of a Basaveshwar Teaching and General Hospital, Kalaburagi. Among the cases, male to female ratio is 1.3:1. The youngest patient is 4 years old, while oldest patient is 65 years old female, both were presented with clinical features of acute appendicitis. Highest number of cases were seen in age group 20 – 29 years (128). Most of the patients presented with clinical diagnosis of acute appendicitis with history of right iliac fossa pain with fever and with or without vomiting. However, most of them found to be having acute appendicitis. All the patients were diagnosed clinically with acute appendicitis on the basis of physical and laboratory examinations. None of them had symptoms or were preoperatively diagnosed with an appendicular tumor.

Acute appendicitis is most common histological diagnosis in 326 cases (84.4%), followed by chronic appendicitis in 35 cases(9.06%). Rare Histopathological diagnosis such as tuberculosis of appendix, enterbious vermicularis, round worm, retention mucocele, foreign body granuloma, xanthogranulomatous appendicitis and adenocarcinoma were found.

We have encountered 1 case (0.2%) of tuberculous of appendix, which is not a common finding, it was incidental finding as it was not clinically suspected. Tuberculosis of appendix can be primary or secondary, where incidence of primary tuberculosis of appendix has been reported to be 0.1% - 0.6%[8]. Our case was a case of primary tuberculosis. The lesion can be identified by presence of granuloma consisting of areas of caseous necrosis and langhansgaint cells with no other foci of tuberculosis elsewhere in the body

Three cases of enterobius vermicularis infestation and one case of round worm was noted in our study. They were clinically diagnosed as chronic and recurrent appendicitis. Enterbius vermicularis is usually associated with chronic inflammatory changes rather than acute inflammation [9]. In our cases the parasite was found to be luminal.

Adenocarcinoma of the appendix occurs 0.1-0.2% of appendectomies, corresponding to an estimated incidence of 0.2 per 100,000 per year[10]. The median age is in sixth or seventh decade of life. Adenocarcinomas behave aggressively and in a fashion similar to that of colonic adenocarcinomas, so in the case of an appendicular adenocarcinoma, oncologic resection with right hemicolectomy is the treatment of choice[10]. By analog with the rest of the large intestine, an adenocarcinoma sequence is assumed to occur in appendix. The classification of appendiceal adenocarcinomas is the same as that in the colon.

Table 1:- Age and gender distribution of appendectomy cases.

Age (in years)	Males	Females	Total
0 – 9	8	5	13
10 - 19	61	20	81
20 – 29	72	56	128

30 – 39	36	45	81
40 – 49	30	19	49
50 – 59	10	20	31
60 - 69	2	1	3
70 and above			
Total	220(56.9%)	166(43%)	386

Table 2:- Histopathological diagnosis of appendectomy specimens.

Findings	Number of cases	Percentage	Treatment
Acute inflammation	326	84.4	appendectomy
Acute suppurative appendicitis	10	2.5	appendectomy
Gangrenous appendicitis	6	1.5	appendectomy
Chronic / recurrent appendicitis	35	9.06	appendectomy
Tubercular appendicitis	1	0.2	appendectomy
Foreign body granuloma	1	0.2	appendectomy
Xanthogranulomatous appendicitis	1	0.2	appendectomy
Enterbious vermicularis	3	0.77	appendectomy
Round worm	1	0.2	appendectomy
Retention mucocele	1	0.2	appendectomy
Adenocarcinoma	1	0.2	Appendectomywith right hemicolectomy

Treatment and follow up:
One patient with primary appendiceal adenocarcinoma underwent right hemicolectomy. Patient was alive and disease free during a follow up of 3rd, 6th and 9th month.The rest of the patients with tuberculosis of appendix, foreign body granuloma, xanthogranulomatousappendicitis, enterbious vermicularis, round worm and retention mucocele were lost to follow up.

Discussion:-

The cause of acute appendicitis is unknown but is probably multifactorial. Luminal obstruction, dietary and familial factors have all been suggested[11].When luminal obstruction occurs, intraluminal pressure surpasses that in the appendiceal veins, causing venous outflow obstruction. Finally ischemia develops in the appendiceal wall which weakens the epithelial integrity and increases the organ's risk of bacterial invasion. Lymphoid hyperplasia and fecoliths are the most common cause of luminal obstruction.This makes the appendix one of the most commonly received specimen in the histology department.The life time risk of appendicitis is 7%, commonly occurring in adolescents and young adults[12]. Appendicitis is most common in the age group of 20-30 years but no age is exempt.Diagnostic sequence of abdominal pain, followed by vomiting with migration of pain to right iliac fossa was first described by Murphy but may be present in only 50% of patients[13]. Percussion tenderness, guarding and rebound tenderness are most reliable clinical findings indicating a diagnosis of acute appendicitis. The diagnosis is predominantly a clinical one. As ultrasonography studies are operator dependent and need careful examination, use of computed tomography in preference to ultrasonography is recommended as it has a greater diagnostic accuracy.

The rate of acute appendicitis varies among countries. Declining rates have been reported in the United states and Europe.In developing countries, the incidence is increasing in most urban centres, probably due to adoption of western diet.

Despite advances in technology and imaging modalities, there is dilemma in the clinical diagnosis of acute appendicitis. Histopathological examination still remains the gold standard method for the confirmation of appendicitis.

The diagnosis of acute appendicitis relies on an evaluation of the patient's history, laboratory and radiologic findings, as well as the surgeon's subjective judgment based on experience. However, if patients requiring surgery are denied the procedure in order to avoid the risk of performing a negative laparotomy, there may be an increased risk of undesirable clinical events, such as perforation.

Conclusions:-

Acute appendicitis is not caused only due to a single etiology but can occur due to a variety of causes whichmay be parasitic infections, benign or malignant lesions. On finding unusual etiology on histopathologicalexamination of appendectomy specimen, it usually results in changing the management plan of the patient.There is sufficient evidence suggesting various uncommon etiologies that may present as acute appendicitisin several cases. Though lab costs may be substantial and unusual findings are only seldom seen but it is stillrecommended to perform a routine histopathological examination of all appendectomy specimens to ruleout unusual pathologies.

Acknowledgements:-

N/A.

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