Research Paper

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HISTOPATHOLOGICAL STUDY OF APPENDIX: A STUDY IN CONSECUTIVE 1000 APPENDECTOMIES

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ABSTRACT

INTRODUCTION-Appendicitis is a very common surgical emergency and has a lifetime risk of 7%.It is approximately 1.4 times greater in men than in women. Misdiagnosis and delay in surgery can lead to complications like perforation and finally peritonitis. Appendiceal tumors are unusual accounting for 0.4%of all gastrointestinal tract malignancies. An estimated 1% of all appendectomy specimens contain a neoplasm. The majority of appendicular tumors are carcinoids while the remaining 10-20% are mucinous cyst adenocarcinoma, adenocarcinoma, lymphoma, paraganglioma and granular cell tumor.

OBJECTIVES OF STUDY

1. To study the patterns of lesions (non-neoplastic and neoplastic) in the appendectomy specimens.
2. To study the detailed morphological features of the different non- neoplastic and neoplastic lesions i.e. both benign and malignant.
3. To correlate the clinical diagnosis with the histopathological diagnosis of the appendectomy specimens.

MATERIALS AND METHODS:

This was a prospective and retrospective study from january 2015 to December 2017 in the department of pathology, S.P.Medical College,Bikaner,Rajasthan.

RESULTS-

A total of 1000 appendectomies were received during the peroid of January 2015 to December 2017. Acute appendicitis was the most common pathology (including all form of acute) reported (45.6%). Next common lesion was Healing appendicitis with peri-appendicitis (32.8%) followed by Healed appendicitis (15.7%) followed by chronic appendicitis (3.6%) followed by tubercular appendicitis(0.5%) then mucocele was 0.3% and adenocarcinoma was also 0.3% followed by parasite(E.vermicularis) 0.2% then 0.1% was Carcinoid was reported. The age of patient ranged from 15 days to 80years with mean age 23.32years.Male to female ratio was 2.23 : 1

CONCLUSION-

So, we concluded that the histopathological spectrum of appendix after appendectomy is extremely variable. Appendix is one of the organs having a wide spectrum of diseases ranging from congenital anomalies, inflammatory to neoplastic lesions.. We recommend all appendectomy specimens should be submitted to histopathology laboratory, as appendix cancer can be detected at an early, potentially curable stage, only by histopathological examination.

KEYWORDS

acute appendicitis, Adenocarcinoma, Chronic appendicitis,E.vermicularis

ARTICLE HISTORY

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INTRODUCTION:

Appendicitis is a very common surgical emergency and has a lifetime risk of 7%.It is approximately 1.4 times greater in men than in women1. Misdiagnosis and delay in surgery can lead to complications like perforation and finally peritonitis. Therefore certain scoring systems like Alvarado Scoring System are established which aid in the diagnosis of acute appendicitis, provides high degree of positive predictive value and thus diagnostic accuracy2.

Appendiceal tumors are unusual accounting for 0.4%of all gastrointestinal tract malignancies. An estimated 1% of all appendectomy specimens contain a neoplasm. The majority of appendicular tumors are carcinoids while the remaining 10-20% are mucinous cyst adenocarcinoma, adenocarcinoma, lymphoma, paraganglioma and granular cell tumor3. Not only has the pathologic diagnosis of acute inflammation, at times unusual findings such as incidental tumors highlighted the importance of pathologic analyses of every single resected appendix.

MATERIALS AND METHODS:

This was a prospective and retrospective study from january 2015 to December 2017 in the department of pathology, S.P.Medical College,Bikaner,Rajasthan.

Appendectomy specimens received were fixed in 10% neutral buffered formalin and embedded in paraffin .Three sections were obtained from tip,mid part and base of appendix.Additional sections were taken from any grossly abnormal area if present.Sections were then stained with H&E stain and examined microscopically.

Results-

A total of 1000 appendectomies were received during the peroid of January 2015 to December 2017. Acute appendicitis was the most common pathology (including all form of acute) reported (45.6%).Acute appendicitis with peri-appendicitis was the most common pathology reported (39.1%) in all form of acute appendicitis, Next common lesion was Healing appendicitis with peri-appendicitis (32.8%) followed by Healed appendicitis (15.7%) followed by chronic appendicitis (3.6%) followed by tubercular appendicitis(0.5%) then mucocele was 0.3% and adenocarcinoma was also 0.3% followed by parasite(E.vermicularis) 0.2% then 0.1% was Carcinoid was reported.(Table 1)

The age of patient ranged from 15 days to 80years with mean age

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23.32 years(Table2).Male to female ratio was 2.23 : 1(Table2).

Table1-Leisons of Appendix among appendicectomies

Code	Histopathological Diagnosis	Sex				Total	
		Female		Male			
		No.	%	No.	%	No.	%
A	Acute appendicitis (including of all forms of acute appendicitis)	112	11.2	344	34.4	456	45.6
B	Acute appendicitis (Acute appendicitis with periappendicitis)	88	8.8	303	30.3	391	39.1
C	Acute appendicitis going towards healing	03	0.3	07	0.7	10	1
D	Acute appendicitis with granulomatous reaction	01	0.1	00	0	01	0.1
E	Acute appendicitis with perforation	03	0.3	00	0	03	0.3
F	Acute necrotizing appendicitis (including Acute necrotizing appendicitis with periappendicitis)	05	0.5	14	1.4	19	1.9
G	Acute on chronic appendicitis	02	0.2	O4	0.4	06	0.6
H	Acute Suppurative appendicitis (with peri-appendicitis)	10	1	16	1.6	26	2.6
I	Chronic appendicitis	14	1.4	22	2.2	36	3.6
J	Tubercular appendicitis	03	0.3	O2	0.2	05	0.5
K	Gangrenous appendicitis	00	0	01	0.1	01	0.1
L	Healedappendicitis(with peri-appendicitis)	64	6.4	93	9.3	157	15.7
M	Healing appendicitis(with peri-appendicitis)	108	10.8	220	22.0	328	32.8
N	Hemorrhagic appendicitis	01	0.1	00	0	01	0.1
O	Parasite (E.Vermicularis)	01	0.1	01	0.1	02	0.2
P	Adenocarcinoma	01	0.1	02	0.2	03	0.3
Q	Carcinoid	00	0	01	0.1	01	0.1
R	Mucocele	00	0	03	0.3	03	0.3
S	Normal appendix	06	0.6	01	0.1	07	0.7
T	Total	310	31	690	69	1000	100

Table 2- Distribution of cases according to age group(Year)

Age group	No.of cases	%
<_ 20	489	48.9
21-30	257	25.7
31-40	127	12.7
41-50	69	6.9
51-60	32	3.2
61-70	18	1.8
>70	8	0.8
Total	1000	100
Mean Age (years)	23.32(Years)	

Table 3- Distribution of cases according to Sex

Sex	NO. Of Cases	%
Female	309	30.9
Male	691	69.1
Total	1000	100

Table 4-Histopathological diagnosis of appendix carcinoma found in this study

1	Histopathological diagnosis	Sex				Total	
		Female		Male			
		NO.	%	NO.	%	NO.	%
2	Adenocarcinoma	1	0.1	2	0.2	3	0.3
3	Carcinoid	0	0	1	0.1	1	0.1

Among 4 cases of malignancy, adenocarcinoma was found in 3 cases and 1 csae of carcinoid reported.

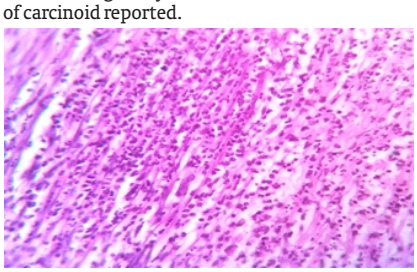

Figure1:Acute appendicitis. (H&E,40X) showing dense infiltrate of neutophils

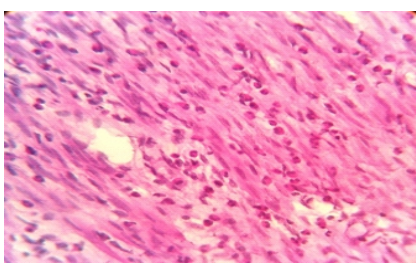

Figure2: Healing appendicitis(Acute eosinophilic appendicitis) (H&E,40X).

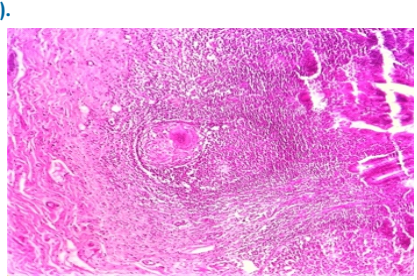

Figure3. TB OF APPENDIX (10X H&E)SHOWING GRANULOMA FORMATION .

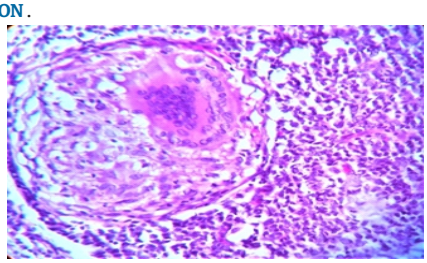

FIGURE 4 -TB OF APPENDIX 40X SHOWINGGIANTCELL,EPITHELOID CELLS & FIBROBLASTIC REACTION

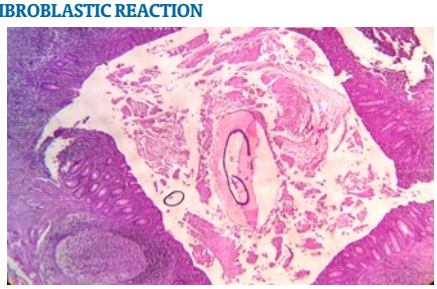

Figure5:H&E (40X) SHOWING E.VERMICULARIS IN LUMEN OFAPPENDIX

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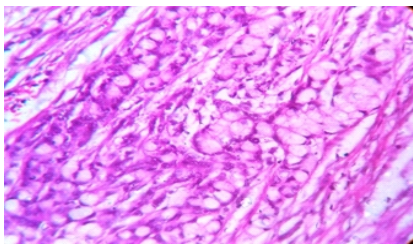

Figure 6:ADENOCARCINOMA OF APPENDIX 40X H&E

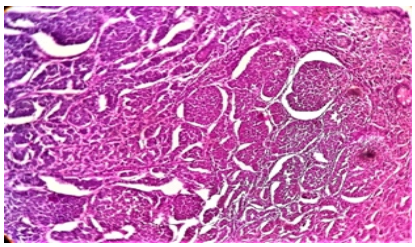

FIGURE 7 -CARCINOID OF APPENDIX (10X)

DISCUSSION:

The histopathological spectrum of appendix disease after appendectomy is found to be quite diverse. The incidence of appendix lesion varies depending upon on races,countries,and institutes. The present study was carried on 1000 appendectomy specimen to study various histopathological lesions in resected appendix.

In present study, lesions of appendix were more common in males than in females with a male to female ratio of 2.23:1 which was similar to other study carried out by Hakan Yabanoğlu et al 4,Hanish Kumar Chawda et al5,Dhiraj B. Nikumbh et al6 and Dr Bharti Devi Thaker et al7reported male to female ratio of 1.63:1,1.56:1,2.34:1 and 2.7:1 respectively.

In our study,the age of the patients ranged from 15days to 80yrs with mean age 23.32yrs which is similar with study ofNadir Mehmood et al8 in which mean age was 23yrs.In study of Dr Bharti Devi Thaker et al7 mean age was 34yrs and in study of K. H. in't Hof et al9 mean age was 32.7yrs.Most of the patients were <20yrs (48.9%), followed by age group 21-30 years(25.7%).

Mostof the patientspresentedwith pain abdomen,nausea/vomitingand few were asymptomatic, which is consistent with findings by Rajesh Patil , Narain V.N. et al10.

Dr. Mohsin-ul-Rasool et al 11,Suhailur Rehman et al12 reported that majority of lesions of appendix werenon-neoplastic lesions (98-99%) and neoplastic lesions were (0.6-1.5%).Dr. Medha P. Kulkarni et al13 reported 99.34% were involved by non-neoplastic lesions and 0.66 % by neoplastic lesions. Dr Bharti Devi Thaker et al7 reported that 99% were non neoplastic lesions and 1% was neoplastic. The present study is comparable to the above studies (non-neoplasticlesion was 99.6% and 0.4 % was neoplastic lesion).

In present study, out of total 1000 patients,Acute appendicitis was the most common pathology (including all form of acute) reported (45.6%).They were characterized by neutrophilic infiltration with frequent ulcer formation,gangrenous changesand abscess formations.Acute appendicitis with peri-appendicitis was the most common pathology reported (39.1%) in all form of acute appendicitis, then Acute suppurative appendicitis with peri-appendicitis(2.6%),then Acute necrotizing appendicitis(1.9%),followed by acute appendicitis going towards healing(1%) followed by acute on chronic appendicitis(0.6%),acute appendicitis with perforation(0.3%),acute appendicitis with granulomatous reaction(0.1%). A similar study was done by Mohammad Ayub Jat et al14 also reported acute appendicitis as major histopathological finding, identified in 52% cases. Hanish Kumar Chawda et al5 reported as acute appendicitis most common finding(57.32%). Dr Bharti Devi Thaker et al7reported most common histopathological spectrum was Acute appendicitis (65.4%).Suhailur Rehman et al12 reported 192 (60.8%) cases of acute appendicitis.

Next common lesion was Healing appendicitis with peri-appendicitis (32.8%)%.Out of which 108 were female and 220 were males.The mean age was 25.26yrs. Aravindan K. P. et al15found incidence of healing appendicitis was 6.25% and Dhiraj B. Nikumbh et al6 found 6.8% incidence of healing appendicitis.

The incidence of Healed appendicitis was (15.7%)%,out of which 64 were female and 93 were males ,the mean age of healed appendicitis was 25.57yrs followed by chronic appendicitisfound in 36(3.6%) cases.Mohammad Ayub Jat et al14done study in which 12 cases (out of 480) of chronic appendicitis found and incidence was 2.5%.Suhailur Rehman et al12 reported 7.9% incidence of chronic appendicitis .

The incidence of tubercular appendicitis in our study is 0.5%.There were 3 females and 2 males found with tubercular appendicitis in our study . The mean age was 20.8 yrs. Similar study done by Chong V H et al 16 in which incidence was 0.08%. and Nadir Mehmood et al8 reported 1.8% incidence of tubercular appendix.

In our study the incidence of appendicitis with parasite(E.vermicularis) was 0.2%.Out of which 1 was female and 1 was male.The mean age was 24yrs. Results are comparable with studies done by Özgür Aydin et al17&Arif Emre et al18 in which parasite found in 3.15% and 0.6% respectively.

Mucocele of appendix was found 0.3% .All were males. Mean age of the patients was 31.66yrs as comparable with study done by Rajesh Patil, Narain V.N. et al10in which 1.47% patients were diagnosed to have mucocele of the appendix on histopathologic examination. Average age of presentation was 53yrs.

In present study incidence of adenocarcinoma was 0.3%.Out of which one female and 2 males. Mean age of the patients was 40 yrs and M:F ratio was 2:1. Results are comparable with study done by Suhailur Rehman et al12in which 0.3% cases of adenocarcinoma found.

In our study 0.1% cases of carcinoid reported while study done by Suhailur Rehman et al12reported 0.6% cases of carcinoid.

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