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Histopathological finding on appendectomy at tertiary care center

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Abstract

Introduction: Acute appendicitis is one of the most common acute abdominal problem that needs surgical intervention. Emergency appendectomy is one of the most common surgical procedure performed worldwide in department of general surgery. Diagnosis of acute appendicitis is often difficult and requires a combination of clinical, laboratory, and imaging studies. Ultrasound is commonly used as a first line diagnostic tool, with a high sensitivity and specificity. Computerized Tomography is also done whenever dilemma in diagnosis. This study aims to explore the histopathological findings of appendix after appendicectomy at Rapti Academy of Health Sciences (RAHS).

Methods: Retrospective, registry based data conducted on appendix specimens of patients who underwent appendicectomy for acute appendicitis from September 2023 to September 2024. Similarly, other study variables have been extracted from the record file maintained at the medical record section of RAHS. A total of 260specimensof appendix examination were found in hospital record and patient's age above 15 years were included. Incomplete case with missing data was excluded.

Results: The majority of the patients were 15 to 25 years of age, male were higher than female in numbers. The major histopathological findings was benign and in female it was 53.0%. Malignant condition in female were lesser than male. The benign condition was highest and Low Grade Appendiceal Mucinous Neoplasm (LAMN) condition was lesson histopathological findings of appendix.

Conclusion: The study concluded that majority of the patients were between 15 to 25 years of age where male were54.8%and female45.2%. The majority of the histopathological finding of the appendix were benign, in female it was 53.0% and in male 47.0% respectively. In malignant condition female was 42.9% and male 57.1% respectively.

Keywords: Appendectomy, Histopathological, LAMN, RAHS

Introduction

Acute abdominal pain is a common problems that makes patients to visit to emergency departments which accounts 5-10% of cases. [1] This condition has a broad range of diagnosis, with the most common being acute appendicitis. [2,3]

Among this acute appendicitis is the most common leading cause of surgical intervention for acute abdominal conditions. It occurs when the appendiceal lumen is obstructed or due to infection leading to inflammation. Factors to this obstruction include fecal, parasites, tumors, foreign bodies, and infectious agents. [4]

Since the 1940s, the incidence of acute appendicitis has declined steadily. In developed Nations, its annual occurrence is 5.7–50 cases per 100,000 people, primarily affecting those between 10 and 30 years old. The lifetime risk varies globally, with 9% in the USA, 8% in Europe, and 2% in Africa, highlighting geographical differences. [5]

The presentation and severity of acute appendicitis can differ widely, with the rate of perforation ranging between 16% and 40%. Perforations are more frequent in younger patients (40%–57%) and in those over 50 (55%–70%). [6] Diagnosing acute appendicitis is often difficult and requires a combination of clinical, laboratory, and imaging studies. Clinical scoring systems, including physical examination and laboratory studies, are helpful in this regard. [7] Ultrasound is commonly used as a first diagnostic tool, with a sensitivity of 86% and specificity of 81%, as shown by a recent meta-analysis.[8] CT scan is done whenever there is dilemma in diagnosis.

This study aims to explore the histopathological findings of appendectomy specimens at RAHS.

Materials and Methods

This study was conducted at Rapti Academy of Health Sciences. The study proposal was approved by IRC-RAHS (Ref No: 654). The retrospective, registry based data conducted on specimens of patients who underwent appendicectomy for acute appendicitis from September 2023 to September 2024. Similarly, other study variables has been extracted from the record file maintained at the medical record section of RAHS. A total of 260 appendix examination records were found. Patients whose age was above 15 years and who undergo acute appendectomy was included. Incomplete case with missing data was excluded.

Statistical Analysis

Data entry was done in Epi-data 3.1 version. After collection of data, it was checked out systematically then edited, coded and entered. A data analysis was done in IBM SPSS 16.0 version. Quantitative data were summarized by using mean and standard deviation but for categorical data was summarized by frequency and percentage.

Results

Table 1: Age and gender wise distribution of the patients. (N=260)

Age group (Years)	Gender		Total
	Female	Male	
15-25	57 (45.2%)	69 (54.8%)	126 (100.0%)
25-35	26 (54.2%)	22 (45.8%)	48 (100.0%)
35-45	23 (65.6%)	12 (34.3%)	35 (100.0%)
45-55	16 (59.3%)	11 (40.7%)	27 (100.0%)
55-65	10 (71.4%)	4 (28.6%)	14 (100.0%)
>65	5 (50.0%)	5 (50.0%)	10 (100.0%)
Total	137 (52.7%)	123 (47.3%)	260 (100.0%)

Table 1. Represent about the age and gender distribution of participants which revealed that female participants are higher than male participants 137:123. The highest predominance age group among female are 15-25 years where male participants are at 15-25 years only.

Table 2: Distribution of histo-pathological diagnosis of appendix of the patients. (N=260)

Histo-pathological diagnosis of appendix	Frequency	Percentage
Acute appendicitis	74	28.5
Acute appendicitis with periappendicitis	23	8.8
Acute suppurative appendicitis with periappendicitis	42	16.2
Acute suppurative appendicitis	69	26.5
Acute gangrenous appendicitis	45	17.3
Low Grade Appendiceal Mucinous Neoplasm (LAMN)	7	2.7
Total	209	100.0

Table 2. Among 260 cases most of the cases shows benign pathology in which acute appendicitis 28.5% were highly predominance and only 2.7% cases show the malignant pathology condition, LAMN.

Table 3: Distribution of laboratory finding of appendix with gender of the patients. (N=260)

Laboratory Finding	Gender		Total
	Female	Male	
Benign	134 (53.0%)	119 (47.0%)	253 (100.0%)
Malignant	3 (42.9%)	4 (57.1%)	7 (100.0%)
Total	137 (52.7%)	123 (47.3%)	260 (100.0%)

Table 3. Among 260 cases most of laboratory finding of appendectomy with gender of participants, benign were the highly predominance in both female and male 53.0% and 47.0%. And only 52.7% female and 47.3 male show the malignant laboratory finding of appendectomy condition, LAMN.

Table 4: Distribution of histo-pathological diagnosis of appendix with gender. (N=260)

Histo-pathological diagnosis of appendix	Gender		Total
	Female	Male	
Acute appendicitis	46 (62.2%)	28 (37.8%)	74 (100.0%)
Acute appendicitis with periappendicitis	14 (60.9%)	9 (39.1%)	23 (100.0%)
Acute suppurative appendicitis with periappendicitis	23 (54.8%)	19 (45.2%)	42 (100.0%)
Acute suppurative appendicitis	29 (42.0%)	40 (58.0%)	69 (100.0%)
Acute gangrenous appendicitis	24 (53.3%)	21 (46.7)	45 (100.0%)
Low Grade Appendiceal Mucinous Neoplasm (LAMN)	1 (14.3%)	6 (85.7%)	7 (100.0%)
Total	137 (52.7%)	123 (47.3%)	260 (100.0%)

Table 4. Represent about the distribution of histo-pathological diagnosis of appendectomy with gender which revealed that the acute appendicitis is the highest predominance in both female and male, 62.2% and 37.8%. About malignant cases (LAMN) the female account 14.3% and male account 85.7% only.

Table 5: Distribution of histo-pathological diagnosis of appendix with age. (N=260)

Histo-pathological diagnosis of appendix	Age (years)						Total
	15-25 Years	25-35 Years	35-45 Years	45-55 Years	55-65 Years	>65 Years	
Acute appendicitis	32 (43.2%)	14 (18.9%)	7 (9.5%)	14 (18.9%)	6 (8.1%)	1 (1.4%)	74 (100%)
Acute appendicitis with periappendicitis	14 (60.9%)	4 (17.4%)	3 (13.0%)	2 (8.7%)	0 (0.0%)	0 (0.0%)	23 (100%)
Acute suppurative appendicitis with periappendicitis	21 (50.0%)	11 (26.2%)	5 (11.9%)	4 (9.5%)	1 (2.4%)	0 (0.0%)	42 (100%)
Acute suppurative appendicitis	37 (53.6%)	12 (17.4%)	12 (17.4%)	5 (7.2%)	1 (1.4%)	2 (2.9%)	69 (100%)
Acute gangrenous appendicitis	17 (37.8%)	7 (15.6%)	8 (17.8%)	2 (4.4%)	6 (13.3%)	5 (11.1%)	45 (100%)
Low Grade Appendiceal Mucinous Neoplasm LAMN	5 (71.4%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (28.6%)	7 (100%)
Total	120 (48.5%)	48 (18.5%)	35 (13.5%)	27 (10.4%)	14 (5.4%)	10 (3.8%)	260 (100%)

Table 5.Represent about the distribution of histo-pathological diagnosis of appendectomy with age in which show that the acute appendicitis is the highest predominance in all age groups in which 15-25 years were the highest 43.2% and only 1.4% shows >65 years of age. About malignant cases (LAMN) the age group of 15-25 years account 71.4% and only >65 years account 28.6% only.

Discussion

Acute appendicitis is one of the most common acute abdominal surgical problems, and appendectomy is one of the most common surgical procedure performed worldwide in department of general surgery [9, 11, 12, 18, 19, 20-22].

The incidence of acute appendicitis with peak incidence occurring between the age of 15-25 years of age in both male and female. The gender ratio female are more predominant than male 137:123. Similar finding was shown by Zdichavsky M et.al, Khairy G and Seetahal SA et.al. [10,21, 22].

Similarly study conducted by Gupta K et.al and Patel AV et.al shows that benign pathological condition were high and among benign pathological condition, acute appendicitis were highly predominance; which was similar finding of our study in which 28.5% was acute appendicitis and 53.0% in female, 47.0% in male shows benign pathological condition [13,14].

The malignant pathological condition LAMN was 85.7% in which male gender was highly predominate than female 14.3%. Study conducted by Shapiro R et.al also show that malignant pathological condition was high but study conducted by Tucker ON et.al and Akbulut S et.al has different study of female gender were highly predominate than male gender [15, 16,17].

Conclusion

The finding of this present study concluded that majority of the patients were in between 15 to 25 years of age. Where male54.8%and female45.2%. Most of the findings of the appendix examined were benign where female were 53.0% and male 47.0% respectively. In malignant condition female were 42.9% and male 57.1% respectively.

In histopathological findings of appendix, there was 28.5% benign and LAMN was 2.7%.

Acute appendicitis between 15-25 years of age was benign in 43.2% and age above 65 years was 1.4%. LAMN in the age of 15-25 years was 71.4% and age above 65 years of age was 28.6%.

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