



DEMOGRAPHIC AND HISTOLOGICAL PROFILE OF APPENDICECTOMY SPECIMEN IN A TERTIARY CARE TEACHING HOSPITAL IN GARHWAL, UTTARAKHAND

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ABSTRACT

Introduction: Appendicitis is a medical emergency which requires prompt attention and is usually accompanied by significant morbidity and mortality.

Materials and Methods: In this retrospective study archived data and slides for the period January 2015 to August 2018 were retrieved. The H-E stained slides were examined and gross and histological findings, age and gender were also recorded.

Results: 57.57% (114/198) of the received specimen were from males. 30.30% (60/198) were from the age group 11-20 years and 25.76% (51/198) in the age group 21-30 years. Histologically confirmed acute appendicitis was seen in 21.21% (42/198). 3.03% (6/198) of the cases showed peri-appendicitis. Of these 66.66% (4/6) were seen in males. Necrosis of the whole wall (and perforation on gross examination) was seen in 9.59% (19/198) of cases. 73.68% (14/19) of the cases of perforation were male. 42.10% (8/19) of the cases of perforation was seen in 11-20 years age group and 31.58% (6/19) in the 21-30 years age group. 68.42% (13/19) of cases of lymphoid hyperplasia were male. 47.37% (9/19) of cases of lymphoid hyperplasia were in the 11-20 years age group. 15.15% (30/198) of the cases showed varying degree of fibrosis. 35.86% (71/198) of the appendix specimen were of apparently normal histopathology. 53.53% (38/71) of these normal appendixes were from females.

Discussion/Conclusion: Inflammatory pathology of appendix predominantly affects males and younger age group. Normal appendix is removed predominantly in females in reproductive age group.

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INTRODUCTION

The appendix, in humans is a vestigial organ with no proven physiologic function. The anatomic location of appendix varies among individuals¹. Acute appendicitis is the most common abdominal emergency in the young². The classic symptom triad of acute appendicitis is peri-umbilical pain which eventually localizes to right lower quadrant of abdomen, anorexia, nausea¹. It is usually diagnosed clinically and appendicectomy is the treatment of choice. Delay in diagnosis and treatment can lead to perforation of appendix, peritonitis and sepsis with accompanying increased morbidity and mortality.

MATERIALS AND METHODS

In this retrospective study archived data and slides for the period January 2015 to August 2018 were retrieved. The H-E stained slides were examined and findings recorded by the

criteria mentioned below, and the age and gender were also recorded.

Criteria for the histopathological diagnoses were-

1. Acute appendicitis-presence of acute inflammatory cells in the muscle layers of the appendix¹.
2. Peri-appendicitis-presence of neutrophils and fibrin in the serosa with possible extension into the sub-serosa and muscle layer but the mucosa is not involved¹.

Of the total 2,731 biopsy specimen received in the study period 198 (7.25%) were of appendix. These 198 appendix specimen were studied.

RESULTS

Table 1 shows the gender distribution of various pathology observed and table 2 shows their age wise distribution.

57.57% (114/198) of the received specimen were from males. 30.30% (60/198) were from the age group 11-20 years and 25.76% (51/198) in the age group 21-30 years.

Histologically confirmed acute appendicitis was seen in 21.21% (42/198). 75.60% (31/42) of cases of acute

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appendicitis were males. 28.57% (12/42) cases of acute appendicitis were in the age group of 11–20 years and 21.43% (09/42) were in 21-30 years age group.

Table No 1 Gender distribution of the various pathology seen in the appendix.

Pathology seen	Male	Female
Acute appendicitis	31	11
Peri-appendicitis	04	02
Perforation	14	05
Lymphoid hyperplasia	13	06
Complete fibrosis	03	08
Incomplete fibrosis	17	13
Apparently normal	32	39

Table No 2 Age distribution of the various pathology seen

	0-10 yrs	11-20 yrs	21-30 yrs	31-40 yrs	41-50 yrs	51-60 yrs	61-70 yrs	71-80 yrs
Received specimen	17	60	51	26	20	08	10	06
Acute appendicitis	08	12	09	04	04	00	04	01
Peri-appendicitis	00	04	00	00	01	01	01	00
Perforation	02	08	06	02	00	00	01	00
Lymphoid hyperplasia	03	09	04	01	01	01	00	00
Incomplete fibrosis	00	10	11	04	02	01	01	01
Complete fibrosis	00	01	01	04	03	01	00	01
Normal appendix	04	16	20	11	10	05	03	02

3.03% (6/198) of the cases showed peri-appendicitis. Of these 66.66% (4/6) were seen in males. 66.66% (4/6) of the cases of peri-appendicitis were seen in the age group of 11-20 years. One case showed a combination of peri-appendicitis with lymphoid hyperplasia.

Necrosis of the whole wall (and perforation on gross examination) was seen in 9.59% (19/198) of cases. 73.68% (14/19) of the cases of perforation were male. 42.10% (8/19) of the cases of perforation was seen in 11-20 years age group and 31.58% (6/19) in the 21-30 years age group.

Only lymphoid hyperplasia without any other accompanying pathology was seen in 9.59% (19/198) cases. 68.42% (13/19) of cases of lymphoid hyperplasia were male. 47.37% (9/19) of cases of lymphoid hyperplasia were in the 11-20 years age group.

15.15% (30/198) of the cases showed varying degree of fibrosis. The fibrosis varied from involving just the submucosa with sparing of the mucosa and lumen, to extending from the submucosa to the inner muscle layer with sparing of the outer muscle layer. 56.66% (17/30) of these cases were males. 33.33% (10/30) were in the age group of 21-30 years and 33.33% (10/30) in the 11-20 years age group. Complete fibrosis of the appendix was seen in 5.56% (11/198) cases. 72.72% (8/11) of these cases were females. 36.36% (4/11) of these cases were in the age group of 31-40 years and 27.27% (3/11) of them in the age group of 41-50 years.

35.86% (71/198) of the appendix specimen were of apparently normal histopathology. 53.53% (38/71) of these normal appendixes were from females. 29.58% were from the age group 21-30 years and 22.54% (16/71) in the age group of 11-20 years.

DISCUSSION

This study reaffirms the findings of others^{3-13, 17} that acute appendicitis is commoner in males. Few studies, though, have found female predominance¹⁴⁻¹⁶.

Majority of histologically confirmed cases of acute appendicitis were in the 11-30 years age group. This is in accord with findings of others^{6-9, 11, 15, 16}.

Majority of cases of peri-appendicitis was seen in the 11-20 years age group and showed male predominance. Others have found female predominance^{4, 7, 18}. Thanaletchimy⁷ found peri-appendicitis commoner in <30 years age group as is seen in our series; whereas, Choudhary¹⁸ found it to be commoner in the age range of 14-38 years. Choudhary¹⁸ found salpingitis to be commonest cause followed by pelvic inflammatory disease, typhoid enteritis, peritoneal tuberculosis, inflammatory bowel disease and amoebiasis. They could ascertain the cause by performing post-operative ultrasound and contrast enhanced computed tomography.

In our series majority of cases of lymphoid hyperplasia were seen in the age group of 0-20 years and predominantly in males. Hadeel et al.⁴ found female predominance and majority in the 11-30 years age. Duzgun et al.¹⁰ found lymphoid hyperplasia in older patients i.e.>20 years of age.

Partial or incomplete fibrosis was seen predominantly in the 11-30years age group and complete fibrosis in 31-50 years age group. All age groups showed incomplete or complete fibrosis of the appendix with sparing of 0-10 years age group. Male predominance was seen in incomplete fibrosis of appendix and female predominance in case of complete fibrosis of the appendix. Sharma et al.³ also found fibrosis in all age groups with a peak in the 21-40 years age group. Hadeel et al.⁴ found fibrous obliteration of appendix predominantly in less than 40 years age group in contrast to our finding that it is seen in slightly older age group. Kommuru et al.⁹ found fibro-obliterative changes in females having an older median age than males.

More than a third received specimens (35.85%) in our study had apparently normal histology. They showed a female predominance and majority were from 11-30 years age group though, no age group was exempt. Similar to our findings Njeze et al.⁸ had 36.8% and a female predominance. Sharma et al.³ had 5.7% with female predominance and a peak in the reproductive age group. Thanaletchimy⁷ had 5.7% with female predominance and majority in less than 30 years age groups. Jahan et al.¹⁴ had 9.46% and female predominance. Sapna et al.¹⁷ had 9.6% and a female predominance. Hadeel et al.⁴ had 6.2% normal appendix in their study. Duzgun et al.¹⁰ had 2.2%. Ekka et al.¹⁵ had 14.4% even though they had done ultrasonography in their series. The female predominance and in the reproductive age seen could be due to lower abdominal pain due to gynaecological pathology present as is seen by Choudhary¹⁸ in their series for peri-appendicitis.

Alvarado score, modified Alvarado score and RIPASA score were developed to obviate removal of normal appendix. These scores have varying degree of accuracy with Alvarado score being 75.2%¹⁹ and 91.8% for RIPASA²⁰. Webb et al.²¹ report that by use of pre-operative CT scan in their series 4.7% had normal appendix compared to 12.7% who underwent appendicectomy without a pre-operative CT scan. Mohammed

et al.²² report a specificity of 75% and sensitivity of 95.83% using ultrasonography in their series. Wang et al.²³ showed TNF- α and IL-2 expressions, markers of inflammation, in 7 out of 31 histologically normal appendix specimen.

CONCLUSION

Inflammatory pathology of appendix predominantly affects males and younger age group. Normal appendix is removed predominantly in females in reproductive age group.

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Conflicts of interest

Nil.

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