



E-ISSN: 2616-3470
P-ISSN: 2616-3462
© Surgery Science
www.surgeryscience.com
2019; 3(3): 01-04
Received: 01-05-2019
Accepted: 05-06-2019

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Analysis of clinico-epidemiological profile in patients of acute appendicitis at a tertiary care centre in Karnataka: A retrospective observational study

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DOI: <https://doi.org/10.33545/surgery.2019.v3.i3a.01>

Abstract

Background: Appendix, a part of large intestine and gut associated lymphoid tissue is often inflamed resulting in acute appendicitis which is a surgical emergency. The current study is undertaken to analyse the clinic-epidemiological profile of acute appendicitis

Methods: A retrospective database analysis of 98 patients of Acute appendicitis admitted in the Department of General Surgery, from January 2018 to January 2019 for age, Sex, Clinical diagnosis, Ultrasound diagnosis, Total leucocyte count, Histopathological diagnosis were noted.

Results and Conclusion: Acute appendicitis was more common in males (65%) and in 15-30yrs age group. Mean TLC was $12022.73 \pm 434.23^{**}$ with only 33.67% patients TLC more than 14000/mm³. 51% patient's histopathological diagnosis was acute appendicitis. Early hospital admission, antibiotic therapy or early uptake for surgical procedure based on clinical examination and sonological evaluation may be the reason for more number of patients with TLC less than 11000mm³.

Keywords: acute, appendicitis, TLC, epidemiology

Introduction

The vermiform appendix, a part of large intestine is located in the right iliac fossa, the tip occupying several positions. It is a narrow, blind ending tube, measuring 6-10 cms in adult. It attains mature dimensions by 3 years of age. It is a midgut derivative. Hence it is supplied by Appendicular branch of ileocolic artery derived from Superior mesenteric artery.

The lumen of appendix is irregular due to submucosal lymphoid tissue and may contain partial mucosal folds or might be partially or completely obliterated by fibrous tissue in adults. Although conservatively believed to be vestigial, new studies suggest vermiform appendix as an important participant in intestinal ecological microbial contributions and maintenance [2].

Luminal obstruction by inspissated material, an appendicolith or lymphoid swelling may result in acute appendicitis which may lead to suppuration, infarction or necrosis which may have life threatening implications [1].

Acute appendicitis is a very common cause of acute abdomen requiring surgical intervention with an incidence of about 100 per 100,000. The life-time risk of developing appendicitis is 8.6% for males and 6.7% for females with 90% found in children and young adults and 10% in patients over 60years old [3, 4, 5, 6].

Presumptive diagnosis of Appendicitis is routinely based on history and per abdomen examination. It is further confirmed by laboratory workup and ultrasound scanning and CT abdomen in certain special cases. The sensitivity and specificity of Clinical presentation is 45–81% and 36–53% [7], respectively. The possible cause is variation of appendix [8]. Posture, caecal distension and other factors. Increased Total leucocyte count with more neutrophils, an increased C reactive protein in special cases is associated with complications of appendicitis [9].

The current study was taken up to analyse the patterns and presentations of acute appendicitis at our centre retrospectively

Material Methods

A retrospective analysis of medical database records was done of 98 consecutive patients who were admitted in the Department of General Surgery, Srinivas Institute of Medical Sciences and

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research centre, Mukka, Mangalore with preliminary diagnosis of Acute appendicitis from January 2018 to January 2019 after obtaining institutional ethical clearance.

Results

The following data was noted for the study

1. Age
2. Sex
3. Clinical diagnosis
4. Ultrasound diagnosis
5. Total leucocyte count
6. Histopathological diagnosis.

The data was then analysed using Graph PAD instat software version 3.5.

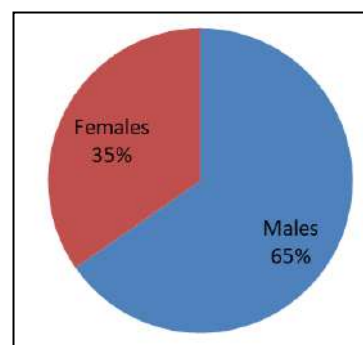


Fig 1: Sex distribution of patients of acute appendicitis

Table 1: Analysis of age distribution in patients of acute appendicitis

Mean Age in years		30.510
Standard error of mean(yrs)		1.429
Range (yrs)	Minimum	10
	Medium	25
	Maximum	78

The mean age of acute appendicitis was 30.510 ± 1.429 in our study.

Table 2: Age and sex distribution of acute appendicitis

Age group (years)	Male (%)	Female (%)	Total	Percentage (%)
0-14	1(1.56)	2(5.88)	3	3.06
15-30	40(62.5)	17(50)	57	58.16
31-45	18(28.13)	6(17.65)	24	24.49
46-60	4(6.25)	6(17.65)	10	10.2
More than 60	1(1.56)	3(8.82)	4	4.08
Total	64	34	98	

The maximum incidence of acute appendicitis in both sexes was 15-30yrs (58.16%).

Table 3: Analysis of total leucocyte count (TLC) in patients of Acute Appendicitis

Total leucocyte count (TLC)	Clinical diagnosis of acute appendicitis and with usg abdomen	%
3500-5000	5	5.1
5001-6500	3	3.06
6501-8000	11	11.22
8001-9500	12	12.24
9501-11000	14	14.29
11001-12500	11	11.22
12501-14000	9	9.18
More than 14000	33	33.67
Total	98	100

33.67% of patients of acute appendicitis had TLC of more than 14000/mm³.

Table 4: Analysis of Total leucocyte count (TLC)

	Mean \pm SEM	Range			Lower 95%CI	Upper 95% CI
		Minimum	Median	Maximum		
TLC	12022.73 \pm 434.23**	3500	11905	22130	11160	12666

**p value < 0.0001, extremely significant by one sample 't' test (two tailed)

Table 5: Total leucocyte count (TLC) comparison between sexes

TLC analysis		Males	Females
Mean		12129.53	11821.71
SEM		549.33	714.99
Range	Minimum	3500	4000
	Median	11485	11995
	Maximum	22130	20300
Lower 95%CI		11031	10366
Upper 95%CI		13228	13227

P value: 0.1143- not significant by Paired t test (two tailed)

Table 6: Statistical analysis of TLC between different age groups

TLC analysis		0-14yrs	15-30yrs	31-45yrs	46-60 yrs	>60yrs
Mean		8220	11568	12852	13352	13078
SEM		1941.3	551.34	930.76	1530.5	1162.1
Range	Minimum	4400	3500	4930	6000	10500
	Median	9410	11000	13065	14930	13045
	Maximum	10790	22130	21060	20090	15720
Lower 95%CI		-153.47	10463	10926	9890.1	9379.8
Upper 95%CI		16553	12673	14777	16814	16775

The Mean ± SEM is more in the higher age group which may be possible due to the varied time of admission to the hospital

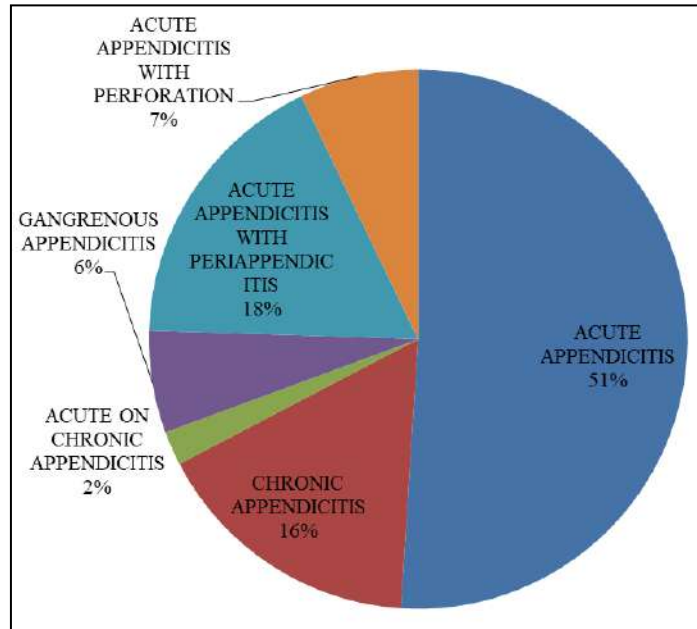


Fig 2: Distribution of histopathological diagnosis

Discussion

The present study was done on 98 consecutive patients of acute appendicitis admitted in the study period. It was observed that the incidence was more in males (65%) than females similar to other studies [10-14].

The maximum incidence of acute appendicitis in both sexes was 15-30yrs (58.16%) followed by 31-45 yrs (24.49%) as seen in other studies [10, 11]. Increased size of appendicular orifice in early childhood and decreased luminal size in elderly may explain the fact that it is less common in these age group [1].

33.67% of patients of acute appendicitis had Total leucocyte count of more than 14000/mm³. The lesser counts in other patients may be due to early admission, antibiotic therapy or due to early uptake for surgical procedure based on clinical examination and sonological evaluation. Higher NLR ratio which is a better predictor of complications like gangrenous appendicitis is a limitation in our study. However the Mean ±SEM TLC of 12022.73±434.23 was found extremely significant by one sample t test (two tailed).

There was statistically no difference when TLC was compared between sexes. There was no significant difference of TLC between different age groups although a lesser count was seen in 0-14 yrs age group.

51% of patients had uncomplicated acute appendicitis based on histopathological diagnosis and 31% of the patient had complicated acute appendicitis either gangrenous, or perforations or periappendicitis.

Conclusion

The present study shows higher incidence of acute appendicitis

in males than females with a higher prevalence in 15-30 years age group. Ultrasound abdomen corroborated clinical examination. The mean TLC was 12022.73±434.23 which was statistically significant. Only 33.67% of patients had increased TLC of more than 14000/mm³. Histopathology demonstrated features of acute appendicitis in 51% of patients.

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