

INCIDENCE OF ENTEROBIUS VERMICULARIS INFESTATION IN APPENDICECTOMY SPECIMENS WITH CLINICAL DIAGNOSIS OF ACUTE APPENDICITIS.

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Abstract

Objectives: This present study was to evaluate the incidence and clinical infestation of *Enterobius vermicularis* in acute appendicitis patients.

Methods: A total of 62 appendectomy specimen with a clinical diagnosis of acute appendicitis of patients with age group 1year to greater than 50 years with irrespective of sexes were enrolled in this study.

Results: Data was analysed by using simple statistical methods with the help of MS-office software. Majority of patients 34(54.84%) were belonged in age group of 21-30 years. Second common age 20(32.26%) group was 11-20 years. Most of the patients were females 49(79%). Histological findings of specimen shown that specimen had 28(45.16%) acute with periappendicitis, 10(16.13%) acute appendicitis. 8(12.90%) Vermiform, 7(11.29%) reeeding appendicitis, 5(8.06%) gangrenous appendicitis and 4(6.45%) oxyuriasis.

Conclusions: *Enterobius vermicularis* infection was commonly seen in second to third decades of life. Females were more preponderance than males. Acute with periappendicitis was the commonest histological findings of specimen. And hence, *E. vermicularis* infection can be controlled by anthelmintic treatment, yet very unfortunately patients undergo an appendectomy. An awareness and a high index of suspicion is required since these patients generally have multiple previous visits to the hospital with abdominal discomfort before an acute abdomen that requires surgery. Careful examination and symptomatology awareness, blood examination especially in younger age group should aware surgeon of possible cause of abdominal colic.

Keywords: *Enterobius vermicularis*, Acute appendicitis, Appendectomy, Age group, Gender

Introduction

Gastrointestinal infection due to *E. vermicularis* occurs worldwide and is considered to be the most common helminth infection [1]. This condition occurs in all ages and socioeconomic levels, but it is most common in children aged five to fourteen years [2]. The most common nematode parasite of humans in the developed world is the *Enterobius vermicularis* (pinworm) [3]. It is quite known to cause symptoms simulating the appendicitis. The occurrence of parasitic pinworm infestation with AA varies from less than 1% to nearly 4% [4]. As AA is generally a clinical diagnosis, not much confirmatory tests were done and thus the diagnosis of parasitic condition is made only after surgery [5].

Around 4% to 28% of children worldwide are reported to be infected [6,7]. Pinworms measure approximately 10 mm in length and live with their heads embedded in the right hemicolon and adjacent bowel [8]. Infection via the fecal-oral route is the most common route of human transfer, while eggs may remain viable for two to three weeks on clothing and bedding, facilitating easy spread

among family members and groups of children [9]. *E. vermicularis* infection is usually asymptomatic. The most common symptom is pruritus in the perianal region, but infestation may also present with ileocolitis, enterocutaneous fistula, urinary tract infection, mesenteric abscesses, salpingitis and appendicitis [10]. Objectives of our study was to evaluate the incidence and clinical infestation of *Enterobius vermicularis* in acute appendicitis patients.

Material & Methods

This present study was conducted in Cytopath Laboratory, Harihar Singh Road, Bariatu, Ranchi, India during a period from March 2019 to December 2019.

We were collected the appendectomy specimen with a clinical diagnosis of acute appendicitis. A total of 62 appendectomy specimen of acute appendicitis of patients with age group 1year to greater than 50 years were enrolled in this study. The histopathology reports and recorded demographic data of patients were reviewed in detail and then the patients' age and sex, as well as the

existence and type of parasites and the histopathological findings were extracted using a structured template form.

Statistical Analysis

Data was analysed by using simple statistical methods with the help of MS-office software. All data was tabulated and percentages were calculated.

Observations

In this present study, a total of 62 appendectomy specimen of acute appendicitis patients were enrolled. Majority of patients 34(54.84%) were belonged in age group of 21-30 years. Second common age 20(32.26%) group of patients were 11-20 years.

Table 1: Age wise distribution of acute appendicitis patients.

Age group (years)	No. of patients	% of patients
0-10	4	6.45%
11-20	20	32.26%
21-30	34	54.84%
31-40	2	3.22%
41-50	1	1.61%
>50	1	1.61%
Total	62	100%

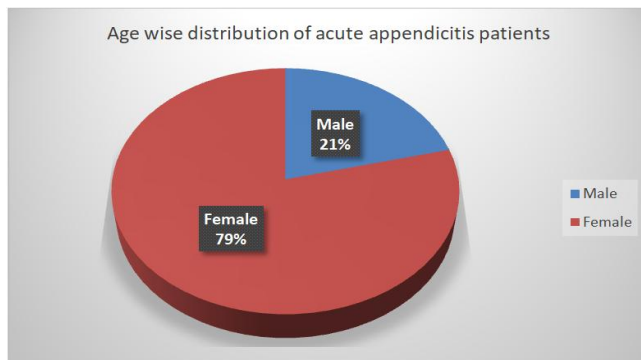


Figure 1: Gender wise distribution of acute appendicitis patients.

In this present study, majorities of patients were females 49(79%) and 13(21%) were males.

Table 2: Histological variation in appendix.

Histological appearance	No. of patients	% of patients
Acute appendicitis	10	16.13%
Acute with periappendicitis	28	45.16%
Receding appendicitis	7	11.29%
Gangrenous appendicitis	5	8.06%
Vermiform	8	12.90%
Oxuyriasis	4	6.45%
Total	62	100%

On histological examination of specimens, 28(45.16%) specimens had acute with periappendicitis. 10(16.13%)

specimens had acute appendicitis. Vermiform, receding appendicitis, gangrenous appendicitis and oxuyriasis were 8(12.90%), 7(11.29%), 5(8.06%) and 4(6.45%) respectively.

Discussions

Acute appendicitis is considered as the most common cause of emergency surgery[11]. The etiology of acute appendicitis rarely involves parasitic and protozoal infections of the gastrointestinal tract in the developed countries [12]. Inversely, many parasitic infections frequently lead to the symptomatology of acute appendicitis. It is exactly this ambiguous relation between parasitic infections and acute appendicitis that still induces a controversy as to whether or not these parasites may cause appendicitis, despite the fact that many parasites have been found in the lumen of the appendix [13].

The frequency of *E. vermicularis* existence in appendectomy specimens was reported to vary from 0.23 to 15% in different studies (Karatepe et al. 2009) [14]. However, the role of *E. vermicularis* in the pathogenesis of appendicitis remains controversial even though today (da Silva et al. 2007)[12].

In this present study, commonest age of acute appendicitis patients 34(54.84%) were 21-30 years. Second common age 20(32.26%) group of patients were 11-20 years.

E. vermicularis is the most common helminth found in the appendix, particularly in children and young adults (Yabanoğlu et al. 2014)[15].

Appendicitis, an inflammation of the inner lining of the vermiform appendix which can spread to its other parts (Aydin 2007)[16], is the most common acute abdominal disease (Stërba and Vlcek 1984) [17]. The incidence of appendicitis is 8.6 and 6.7% for men and women in their lifetime, respectively. It is a peak during the second and third decades of life (Lamps 2004) [18].

In this present study, majorities of patients were females 49(79%) and 13(21%) were males.

More than 65% of appendices containing *E. vermicularis* in Ahmad Mardani (2017)[19] study were belonging to female children; in spite of that, the majority of patients who underwent appendectomy were male (n = 8275, 60.20%). This finding also is in agreement with the previous several reports from Iran, (Kazemzadeh et al. 2008)[20] and the other regions of the world (Lala and Upadhyay 2016)[21]. It is necessary to mention that *E. vermicularis* infection is more often found in girls, with a peak age distribution of 12 years old (Dahlstrom and Macarthur 1994) [22].

E. vermicularis infestation of the appendix may cause a spectrum of pathologic changes in the appendix that range

from lymphoid hyperplasia to life-threatening complications such as gangrenous appendicitis and perforation with peritonitis. Lymphoid hyperplasia in response to the presence of the parasite may be the first tissue reaction leading to clinical signs of appendiceal colic. On the other hand, the obstructive effect because of the prominent lymphoid tissue may be the initiating event for the inflammatory process [12].

On histological examination of specimens in this present study, majorities 28(45.16%) of patient's specimens had acute with periappendicitis. 10(16.13%) specimens had acute appendicitis. Vermiform, receding appendicitis, gangrenous appendicitis and oxuyriasis were 8(12.90%), 7(11.29%), 5(8.06%) and 4(6.45%) respectively.

Sah and Bhadani described in their study two cases of acute appendicitis, in which eggs of the parasite were attached to mucosa in one case and in another *E. vermicularis* had invaded the mucosa and was lying intramurally. However, presumably the worms had just been caught by the severe inflammation in these two cases of acute appendicitis [23].

Sterba and Vlcek found that the number of granulomas in appendices infested with *E. vermicularis* far exceeded the number of granulomas in a control group of noninfested appendices[24].

Conclusions

This present study concluded that the *E. vermicularis* infection was commonly seen in second to third decades of life. Females were more preponderance than males. Acute with periappendicitis was the commonest histological findings of specimen. And hence, *Enterobius vermicularis* infection can be controlled by anthelmintic treatment, yet very unfortunately patients undergo an appendectomy. An awareness and a high index of suspicion is required since these patients generally have multiple previous visits to the hospital with abdominal discomfort before an acute abdomen that requires surgery. Careful examination and symptomatology awareness, blood examination especially in younger age group should aware surgeon of possible cause of abdominal colic.

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