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WORM INFESTATION IN APPENDIX- A RETROGRADE STUDY

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ABSTRACTS: OBJECTIVE: To evaluate the role of common worm infestation in the etiology of acute appendicitis. **STUDY DESIGN:** Descriptive case series. **PLACE AND DURATION OF STUDY:** Department of surgery, Mata Gujari Medical College, Kishanganj, Bihar, India from May 2013 to March 2015. **METHODOLOGY:** A retrospective analysis of histopathology reports of 1468 appendix specimen of patients of all age and gender who underwent appendectomy for acute appendicitis was done. Enterobius vermicularis was found to be most common worm present in the appendix followed by ascaris species. Detail histopathology reports of 76 cases with appendiceal enterobius vermicularis infestation were examined. Data were analyzed through IBM SPSS version 20. **RESULTS:** A total of 76 specimens of appendiceal enterobius vermicularis infestation among 1468 appendectomy cases produce a frequency of 5.17%. Mean age group of patients with appendiceal enterobius vermicularis infestation was 14.38±9.83 year with an overwhelming (50.76%) presenting in second decade of life. Male to female ratio was 1.24:1. Normal histology (n=48, 63.15%) was most frequently reported followed by lymphoid hyperplasia (n=18, 25%), whereas only 08(10.52%) cases of enterobius vermicular infestation had acute supportive appendicitis. **CONCLUSIONS:** Enterobius vermicularis is the most common worm infestation in appendix and result in symptoms mimicking acute appendicitis without causing acute inflammation of the appendix. So it cannot be considered conclusively in the etiology of acute appendicitis. Antihelminthic therapy must be instituted for cases of enterobius vermicularis infestation.

KEYWORDS: Acute appendicitis, Histopathology, Appendiceal enterobius vermicularis, Parasitic infestations.

INTRODUCTION: Acute appendicitis is the most frequently observed disease requiring emergency surgery.⁽¹⁾ The incidence of appendectomy is 12% for men and 25% for women and the lifetime risk of acute appendicitis is 8.6% and 6.7% for men and women, respectively.⁽²⁾ Appendicitis is primarily a disease of adolescents and young adults with a peak incidence in the second and third decade of life.⁽³⁾ A variety of neoplastic and inflammatory conditions can mimic acute appendicitis. Parasites are one of the most uncommon causes of acute appendicitis. Enterobius vermicularis, ascaris lumbricoides, schistosoma species and Taenia species are the parasites that can lead to a clinical picture of acute appendicitis. Enterobius vermicularis is the parasite that most frequently contributes to a clinical picture of acute appendicitis.^(4,5) Clinical diagnosis of acute appendicitis is routinely done on history especially of migratory pain and elicitation of physical signs. Out of reported 250,000 appendectomies performed worldwide annually, about 15% are carried out on non-appendiceal pathologies.⁽⁶⁾ In literature there is a consensus on luminal obstruction being the most common cause of acute appendicitis. Luminal obstruction is mostly caused by fecal impactions and lymphoid hyperplasia.^(3,7,8) Appendiceal parasitosis is almost never suspected or diagnosed pre-

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operatively. So post-operative histopathology is the only definitive means to confirm the presence of parasites.

METHODOLOGY: This descriptive case series involved retrospective analysis of 1468 patients who underwent appendectomy for acute appendicitis at Mata Gujari medical college, kishanganj, Bihar, India from March 2013 to March 2015. The diagnosis of acute appendicitis was based on history and clinical examination, elevated white blood cell count and in most cases strengthened by ultrasonography. All surgically removed specimens were sent for histopathology at the pathology department of hospital. Details of the patient with all report was sent to the record room of MGM Medical College. Data were retrieved from record room and collected on Performa. Demographics and detailed histopathology of the shortlisted cases were studied. Polymorphonuclear neutrophil infiltration in the mucosa and or deeper layer was observed in all diagnosed case of acute appendicitis. Histopathological classification of appendix specimen with parasite was normal histology, acute appendicitis, acute suppurative appendicitis and eosinophilia. Cases with normal histology were considered as negative appendicectomy. Data were coded, encoded and analysed using International Business Machine Statistical Package for social science (IBM SPSS) version 20.0. Continuous variables reported as mean ($\pm$) standard deviations while categorical variables were expressed as frequency and percentage. Bar graph and table were used to present data.

RESULTS: A total of 1468 Specimens were obtained at open and Laparoscopic appendectomies. A total of 76 (5.17%) showed enterobius vermicularis on histopathological examination while only 4 patients have ascaris infestation. Male to female ratio of enterobius vermicularis was 1.24: 1. Their ages ranged from 2 year to 60 year with a mean age of 14.38 $\pm$ 9.83 year. Appendiceal enterobius vermicularis infestation mostly occurred in second decade of life. Seventy -four samples were reported to contain worm while two samples had ova of enterobius vecmiculasis in the lumen. Normal histology was reported in majority (63%) of the patients followed by lymphoid hyperplasia (25%).

Table shows the details of histopathology reports.

Histopathology	Infestation		Total n (%)
	Worm(n)	Ova(n)	
Normal histology	48	00	63.15
Lymphoid Hyperplasia	18	01	25
Acute appendicitis	06	00	9.21
Acute suppurative appendicitis	00	01	1.31
Eosinophilia	02	00	2.63
TOTAL	74	02	76

Table 1: Histopathology Reports of Infested cases.

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DISCUSSION: Parasitosis is a significant health problem in endemic countries. Although parasitic diseases are mainly observed in tropical countries, they have also started to become a significant health problem in developing countries due to increasing migration and travel.⁽⁷⁾ Enterobius vermiculosis, commonly known as pinworm or threadworm is estimated to affect up to 209million people globally and is considered to be the most common helminthes infection.⁽⁹⁾ This parasite has the propensity to colonize people without causing much specific symptoms. It commonly causes benign symptoms like pruritis ani and restless sleep but can conveniently mimic acute appendicitis leading to negative appendectomy.^(6,7) The relationship between E. vermiculosis and acute appendicitis was first discovered towards the end of the 19th century.^(10,11) The documented infestation in appendix was first reported by still in late 19th century.⁽¹⁰⁾ The actual role of parasitic infestation as a co-factors in appendicitis is still open to debate.^(1,3,6) It has been observed that enterobius vermicularis can cause pathological changes to the appendix, ranging from lymphoid hyperplasia to acute phlegmonous appendicitis, gangrenous appendicitis and peritonitis.^(4,12) Our study showed normal histology (n =48, 63.15%), followed by lymphoid hyperplasia (n=18, 23.6%) whereas only 08(10.52%) cases of enterobius vermicularis infestation had acute or acute suppurative appendicitis. [Table -Histopathology Reports].

We have also studied the presence of faecoliths along with parasites considering facecloth as important etiology of acute appendicitis.^[7, 8, 13] In our study out of 76 specimen 46 contain faecolith. 28cases of normal pathology had no faecoliths while 20 cases had both faecoliths and parasites. Lower number of acute appendicitis and lymphoid hyperplasia were reported in cases without faecoliths.

Figure 1

In such cases acute appendicitis can be attributed to luminal obstruction by either of the cause. Parasitic infestation must be kept in the differential diagnosis of appendicitis with high index of suspicion in patients with doubtful clinical findings, normal white cell count, increased eosinophil and specially if right iliac fossa pain is recurrent.^[14,6]

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Appendectomy is not sufficient in itself for treatment since it is not able to resolve the main cause of the disease. To obtain the best treatment results, Antihelminthic treatment should be provided following surgery.^[15]

CONCLUSION: Enterobius vermicularis is the most common parasitic infestation of the appendix followed by ascaris species. It is common in low socio economic group and its symptom may mimic acute appendicitis even in histopathological normal appendix specimen. Therefore we should always keep parasitic infestation in differential diagnosis of acute appendicitis especially in children and adolescents.

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