Isolation of *Enterobius vermicularis* from patients with acute appendicitis

Meison Abdulbary
Department of Pharmacology , College of Pharmacy , Kufa .University

Abstract :

To evaluate the acute appendicitis due to *Enterobius vermicularis* appendices were surgical removed and then macroscopical and microscopical examination were performed. The samples were obtained from patient admitted in Al-Najaf hospitals , 980 appendices were examined and the result was indicated that 73 of 980 cases (7.45 %) were infected with *E. vermicularis* including 33 male (3.37 %) and 40 female (4.08 %) at the age of 5 – 34 years. The result showed that the patient sex gender not affected on the infection , but the ages group did. The study reported that the existence of *E. vermicularis* in appendicitis can cause the symptoms resembling appendicitis and even inflammation of appendicitis.

Key words : acute appendicitis , parasite , *Enterobius vermicularis*

.

عزل *Enterobius vermicularis* من المرضى الذين يعانون من التهاب الزائدة الدودية

ميسون عبد الباري
فرع الأدوية والسموم ، كلية الصيدلة ، جامعة الكوفة

الخلاصة :

لتحديد ما إذا كان التهاب الزائدة الدودية الحاد يرجع إلى *Enterobius vermicularis* فلقد أخذت عينات الزوائد الدودية المزالة جراحيا و فحصت عياناً ومجهرياً .إن العينات المأخوذة كانت 980 عينة من مستشفيات محافظة النجف وبعد الفحوصات أظهرت النتائج أن 73 عينة) 7.45 %) من أصل 980 كانت مصابة بطفيلي 33 ، *E. vermicularis* منها ذكور (3.37 %) و 40 إناث (4.08 %). في الفترة العمرية (5 – 34) سنة. وبينت النتائج أن جنس المريض لم يؤثر في الإصابة، لكن عمر المريض كان مؤثرا. واستخلصت الدراسة أن وجود طفيلي *E. vermicularis* في الزائدة الدودية يسبب أعراض مشابهة للالتهاب الزائدة الدودية وقد يساعد في حدوث التهاب فيها.

Introduction

The vermiform appendix is a blind – ended tube , it opens into the wall of caecum 2 cm below the ileocaecal valve[1]. An inflammation of it can occur because the opening of it to the large intestine got blocked. Blockage can be due to hard rock – like stool , inflammation of lymph nodes in the intestine which because the presence of parasite or viruses or bacteria[2]. The most dangerous of an inflammation of appendix is rupture of appendix and when this occur , the pathogenic causes (parasite or viruses or bacteria) will liberated to the abdominal lumen then cause the inflammation of the illusions. One of disease influence on human health is appendicitis. Acute appendicitis is the most common cause of "acute abdomen" in young adolescents and appendectomy is often the first major procedure performed by a Surgeon in training[3]. Thus , the acute appendicitis when occur must be needed surgery.

There are many reports in the world concerning the infectivity of appendix with different parasite. The infection of these parasite associated with poor sanitary conditions[4] , unsanitary water get contamination and cause disease[5]. However , the most common parasite which associated with appendicitis is *Enterobius vermicularis*[6]. The pinworm lives in the large intestine, especially in the caecum and the worms can injury the appendicullar membrane and occasionally block its lumen[7]. To evaluate the status of *E. vermicularis* infection ,our present study was an attempt to contribute to understanding of the relationship between *E. vermicularis* infestation and the incidence of appendicitis.

Material and methods

This study include 980 patients suffering from acute appendicitis had been admitted to different hospitals in Al-Najaf city. The patient was confined to bed for appendix surgery . After removal of the appendix , the appendixes had been kept in a well – marked 50 ml jars containing formalin 10% and then macroscopical and microscopical examination were performed.

Direct examination:

1. Naked eye: The ability to recover and identify of parasitic specific causative agent is an important part. Thus , the macroscopical examination started with the external surface then longitudinal slit was performed to expose the interior and then for proper macroscopical examination.
2. Microscopical examination : it occurred by examining the samples and investigate about worm.

Indirect examination :

This examination occurred by after washing the anterior surface with formalin and collect then centrifuge with 3000 rpm[8] to investigate about ova or larva .

The collection data about patients & tested material had been analyzed and tested by using X^2 test.

Results:

All methods of investigation about the adult , larva or ova of the worm occurred to understand the role of *E. vermicularis* in the pathogenesis of appendicitis and the results showed that the overall *E. vermicularis* infestation was 73 cases 7.45 % (Table 1) of which 33(3.36 %)cases in male & 40 (4.08 %) cases in female and there was no significant differences (P>0.05) between the male and female for the infection.

Table – 1 – *E. vermicularis* infestation in appendix in relation to patient sex

Infestation of *E. vermicularis*	Sex of patients					
	Male		Female		Total	
	No.	%	No.	%	No.	%
Positive	33	3.36	40	4.08	73	7.45
Negative	302	30.81	605	61.73	907	92.55
Total	335	34.18	645	65.82	980	100

In Table (2) the highest *E. vermicularis* infestation rate seen affecting ages group (5 - 14) years old (63.01%) , while the lowest incidence (8.21%) seen in (25 – 34) years (Table 2).Tested by using X^2 test showed that there was significant differences (P>0.05) between the ages groups of patients.

Table – 2 – Distribution of *E. vermicularis* infestation in appendix cases according to the ages groups

Infestation of *E. vermicularis*	Age groups of patients							
	5 – 14 years		15 – 24 years		25 – 34 years		Total	
	No.	%	No.	%	No.	%	No.	%
Positive	46	4.69	21	2.14	6	0.6	73	7.45
Negative	475	48.47	289	29.49	143	14.59	907	92.55
Total	521	53.2	310	31.6	149	15.2	980	100

Discussion:

This search study the role of *E. vermicularis* infestation in acute appendicitis cases which it's rate (7.45 %) and this finding is more than what was registered in Al-Hilla (6.0)[9] , while it is less than what was registered in Baghdad (12.2 %)[10] and in Al-Najaf (10 %)[11].

Although *E. vermicularis* has been found in many patients with symptoms of appendicitis and where no other cause has been found the relationship of *E. vermicularis* infection to the acute appendicitis has not been clearly demonstrated. Possibly *E. vermicularis* is the cause of appendicitis – like symptoms (pseudo appendicitis)[12]or , the presence of worm in the appendix may be made injury to the appendical mucosal layer which would lead to encourage of bacterial infection which will developed to inflammation[13]. There is no significant difference (P>0.05)between both sex of the patients (male and female) and this suggests that both of them are equally exposed to parasitic infection , this lead to say that the patient sex not essential gender in the determine the ability of person for infection[14].

The result of this study revealed that a higher percentage of the patients fall within the (5 – 14) years age group with (4.69 %) followed by age groups (15 – 24) and (25 – 34) years of age with (2.14 %) , (0.6 %) respectively. There is significant difference (P>0.05)between the ages of the patients. This would be explained by the wide distribution of *E. vermicularis* in the world in the especially in the less than 19 years old ages[15], beside that appendicitis is one of the common causes of acute surgical disease in children and young adult[16]. It was determined that age is a risk factor for appendicitis and it has an interaction with Enterobius infestation in both sexes. When we listed the symptoms of infection of we found that the roundworm *E. vermicularis* just causes obstruction and producing abdominal pains. Although pinworms are usually considered to be asymptomatic inhabitants of the intestine, when they do cause symptoms there can be a spectrum of non-specific gastrointestinal complaints. It has been proposed that possibly *E. vermicularis* is the cause of appendicitis - like symptoms (pseudo-appendicitis)[17]. The rate of infection by *E. vermicularis* in our study (7.45%) lead us to conclude that parasites in the appendix may produce symptoms which resemble acute appendicitis, but parasitic infection rarely causes acute appendicitis; these are similar to other study findings[18]. In conclusion, *Enterobius vermicularis* seems unlikely causes acute appendicitis. It is not directly involved in the inflammatory process, but its presence evokes irritation. However, *Enterobius vermicularis* may cause symptoms resembling appendicitis without any histological evidence of acute inflammation that the parasite is pathogenic agents has closely relationship with appendicitis[19].

References

1- Sinnatamby, C.S., (1999). Last's Anatomy. Churchill Livingstone, pp: 521.
2- Walloch , J. (2000). Interpretation of diagnostic tests. 7th ed. By Lippin Cott. Williams & Willkins , Philadelphia . pp : 983.
3- Bhasin , S.k.; Khan ,A.B.; Kumar ,V. ; Sharma , S. and Saraf , R. (2007). Vermiform Appendix And Acute Appendicitis. JK-Sciences. 9(4): 167 – 170.
4- Hughes, J.M. and Koplan, J.P. (2005). Saving Lives through Global Safe Water. J. Emerging Infectious Diseases, 11(10): 1636-1637.
5- Kosek, M.; Bern ,C. and Guerrant, R.L. (2003). The global burden of diarrhoeal disease, as estimated from studies published between 1992 and 2000. Bull. World Health Org., 81: 197-204.
6- Da Silva , D.F. ; Da Silva , R.J. ; Da Silva , M. G. ; Sartorelli , A.C. and Rodrigues , M.A.M. (2007). Parasitic infection of the appendix as a cause of acute appendicitis. Parasitol Res. 102 (1): 99 - 102.
7- Hardingrains, A.J. and Ritchie, H.D.(1986). Bailey and Love's short practice of surgery. 19th ed. ELBS/HK Lewis. pp: 1008-1025.
8- Husain , M.H. (1995). Microbial causative agents of appendicitis . M.Sc. thesis . Coll. Med. Univ. Bagh.
9- Al-Mosa , A. H. (2002). Epidemiological study of some parasitic causes for some digestive tract disorder of humans in Al-Hilla city . M.Sc thesis , Coll. Med. Univ. Kufa.
10-Al-Dabbagh , N.Y. ; Al-Izzi , N.S. and Hayatte , Z.G. (1994). The role of *E. vermicularis* in human appendix , J. Fac. Med. Bagh., 36(3):465.
11-Al-Shadood , H. A. S.(2002). Epidemiological study of some parasitic causes of appendicitis in Al-Najaf city. M.Sc thesis , Coll. Sci. Univ. Kufa.
12-Kazemzadeh, H. ; Afshar-Moghadam , N. ; Meamar , A.R.; Rahimi ,H.R. and Kia ,E.B.(2008). *Enterobious vermicularis* and the Appendix: Report of Five Cases. Iranian J Parasitol. 3(3) :54-55.
13-Mattia , A.R. (1992). Perianal mass and recurrent cellulitis due to *Enterobius vermicularis*. Am. J. Trop. Med. Hyg. 47:811-5.
14-Okolie, B.I. ; Okonko, I.O. ; Ogun , A.A. ; Adedeji , A.O. ; Donbraye , E. ; Nkang , A.O. ; Iheakanwa , C. I. and Onwuchekwa , E.C. (2008). Incidence and Detection of Parasite Ova in Appendix from Patients with Appendicitis in South-eastern, Nigeria . World Journal of Agricultural Sciences 4 (S): 795-802.

15-Sarmast , M.H. ; Maraghi , S. ; Elahi , A. and Mostofi , N.E. (2005). Appendicitis and *Enterobius vermicularis*. Pak. J. Med. Sci. 21 (2) :202-205.

16-Meamar , A.R.; Ahady , N. ; Falakimoghaddam , M.H. ; Safari , M.R. and Kia , E.B. (2006). Concomitant infection of appendix with *Taenia* and *Enterobius vermicularis* . J. Med. Sci., 6 (1) : 38- 40.

17-Addiss , D.G ; Shaffer , N.; Fowler , B.X. and Tauxe ,T.V. (1986). The epidemiology of appendicitis and appendectomy in the United State. *Am. J. Epidemiol*. 132:5,910.

18-Yildirim, S.; Nursal , T.Z.; Tarim , A. ; Kayaselcuk , F. and Noyan , T. (2005). A rare cause of acute appendicitis: parasitic infection. Scand J Infect Dis. 37: 757-759.

19-Listoro , G.; Ferranti , F. ; Mancini , G. ; Pizzicannella , G. ; Sablone , M. ; Rossi , M. ; Daristotile , A. and Gaspari , A.L. (1996). The role of *Enterobius vermicularis* in etiopathogenesis of appendicitis. Minvera chir. 51: 293-96.