Enterobius vermicularis and acute appendicitis

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Abstract We present 4 cases of acute appendicitis and a further 2 cases with suspected intestinal obstruction who underwent appendicectomy. In all 6 there were histological findings of enterobius vermicularis appendixitis including 5 cases who had eosinophilic infiltration. This report suggests that not all cases of appendicitis are idiopathic in etiology.


Keywords: Enterobius, appendicitis.

Enterobius vermicularis is the most common worm in humans. Infestation of man with enterobius vermicularis (EV) has been recognized for thousands of years. The relationship between enterobius vermicularis and acute appendicitis is an unusual association.

Case reports

Case 1 A 27-year old Saudi male was well and healthy until 24 hours prior to admission when he started to complain of right iliac fossa pain. This was of sudden onset, without any radiation, and associated with nausea. There was no change in bowel habit. Coughing and stretching of his right leg increased the pain. There were no urinary symptoms, no history of fever or chills, and no history of previous attack.

His temperature was 37.2°C, pulse was 95 bpm and blood pressure 120/80 mmHg. The abdomen was soft but definite direct tenderness and guarding in the right iliac fossa could be elevated. The white blood count (WBC) was 8.9 x 10^9/L. Urine analysis was physiological. Stool samples did not reveal ova and parasites (x2). At laparotomy the appendix was red and inflamed and there was inflamed pericecal appendicular epiploic which was excised together with the appendix. Enterobius vermicularis was clearly seen in the lumen of the appendix microscopically (Fig.1, 2). An eosinophilic infiltration was noted.

Consequently, the patient was treated with mebendazole (vermox) and discharged in good health. He was well at follow-up 3 months later.

Case 2 A 23-year old Saudi female nurse, well until 2 days prior to admission, developed generalized abdominal pain, nausea and anorexia. The pain was initially colicky and diffuse and then shifted to the right iliac fossa 24 hours later. She vomited once 6 hours before admission. Her bowel habit was regular and normal. There was no history of fever, chills or previous attacks. On examination, she was found to be slightly toxic. Temperature was 37.6°C, pulse was 90 bpm regular, blood pressure 120/70 mmHg. The abdomen was soft with localized tenderness. Rovsing's sign, obturator sign, psosas sign were all negative.

The WBC was 14.9 x 10^9/L. Urinalysis was normal. Stool for ova and parasites was negative. The clinical diagnosis was acute appendicitis and appendectomy was carried out. The appendix was found to be inflamed and surrounded by turbid fluid in a retrocecal position, but there was neither gangrene or perforation. The pathology revealed fragmented EV in the lumen and an eosinophilic infiltrate in the mural.

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Postoperatively, the patient was treated with mebendazole and discharged in good health. At 2 months follow-up, she was well.

The salient features of the remaining cases are summarized in the Table. The 2 adults (cases 3 and 4) presented as acute appendicitis whilst the 2 children (cases 5 and 6) presented as intestinal obstruction. In all 4 cases the appendix was normal at laparotomy and at gross pathology.

During the period 1991-1993, 201 appendicectomies were performed and all were histologically examined at the King Faisal Specialist Hospital and Research Center, Riyadh.
Table:

<table>
<thead>
<tr>
<th>Case</th>
<th>Sex</th>
<th>Age</th>
<th>Preoperative diagnosis</th>
<th>Histology</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>M</td>
<td>27</td>
<td>Acute appendicitis</td>
<td>Inflamed appendix at surgery</td>
<td>Enterobius vermicularis in lumen. Mucosal eosinophil infiltrate only.</td>
</tr>
<tr>
<td>2</td>
<td>F</td>
<td>23</td>
<td>Acute appendicitis</td>
<td>Inflamed appendix at surgery</td>
<td>Enterobius vermicularis in the lumen. Mucosal eosinophil infiltration.</td>
</tr>
<tr>
<td>4</td>
<td>M</td>
<td>24</td>
<td>Acute appendicitis</td>
<td>Appendix normal at growth pathology</td>
<td>Enterobius vermicularis in lumen. Lymphocytes, plasma cells and scattered eosinophils noted in mucosa.</td>
</tr>
<tr>
<td>5</td>
<td>F</td>
<td>6</td>
<td>Bowel obstruction</td>
<td>Appendix normal at growth pathology</td>
<td>Fragmented enterobius vermicularis in lumen. Surface epithelium intact, moderate focal eosinophilic infiltrates in the mucosa.</td>
</tr>
<tr>
<td>6</td>
<td>F</td>
<td>7</td>
<td>Recurrent intestinal obstruction</td>
<td>Appendix normal at close pathology</td>
<td>Infestation by enterobius vermicularis in contiguous ileum. Ileum showed submucosal lymphoid hyperplasia and appendix showed mucosal lymphoid hyperplasia.</td>
</tr>
</tbody>
</table>

Discussion and literature review The relationship between Enterobius vermicularis and acute appendicitis has been discussed for over 80 years. An association between symptoms of acute appendicitis and histological findings of intramural parasites is recognized. Budd and Armstrong reviewed 1419 appendices removed from cases of clinical appendicitis and 110 in other surgical procedures. Enterobius vermicularis was identified in 2.7% of patients with clinical appendicitis. Our own incidence of 3.0% (6 histologically proven cases of enterobius vermicularis among 201 appendicectomies), is very similar. Histologically, features of chronic rather than acute inflammation are usually observed in the reported literature series. Again our own experience supports this. In only one of our 6 cases was the mucosal epithelium integrity broken and in general the inflammatory infiltrates suggested a chronic rather than acute process. The association between the finding of enterobius vermicularis within the appendiceal lumen and clinical pathological features appears to be definite since no cases of enterobius vermicularis occurred in appendices removed incidentally during the course of other surgical procedures.

Other investigators showed that histological examination of many sections of vermiform appendices showed that the parasites do invade the tissue and the invasion causes an ulcer in the mucosa. This is supported by allergic reaction with eosinophil polymorph cells. Matsuoka et al found that, when at histological examination he saw a normal appendix and the clinical diagnosis was chronic appendicitis, he could almost invariably find pinworm in the lumen of the appendix. Others found pinworms in less than 1% of examined appendices. It was suggested that they caused symptoms resembling true appendicitis. More recently, a study reviewing 2267 appendices showed that there was a highly significant difference in the incidence of enterobius vermicularis in normal appendices and inflamed appendices which may indicate that the presence enterobius vermicularis in the appendix can give symptoms of acute appendicitis enterobius vermicularis does enter and then leaves an inflamed appendix.

Conclusion Our case reports support the relationship between enterobius and acute appendicitis by finding the parasites intraluminally and causing an eosinophilic reaction.

References
2. Budd and Armstrong. Role of Enterobius vermicularis in...
خلاصة:

تستعرض في هذا التقرير أربع حالات من التهاب الزائدة الحادة، وحالتي انسداد معوي مشتبه به ممن أجريت
فهم عملية استئصال الزائدة. أظهرت الدراسات النسجية للحالات المست مشاهدات تدل على التهاب الزائدة
بالسِرْمِيَة الدودية من ضمنها خمس حالات ارتشاح حمضي. تشير نتائج هذا التقرير إلى عدم غموض أسباب
جميع حالات التهاب الزائدة.

كلمات رئيسية: السِرْمِيَة الدودية، التهاب الزائدة.