Acute Amoebic Appendicitis: Case Report and Review of Parasitic Appendicitis

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Amoebic appendicitis is very rare, occurring in about 0.5% to 2% of acute appendicitis, and usually not reported in children. We report a case of confirmed acute amoebic appendicitis complicating amoebic colitis in a 7-year-old Pakistani boy living in southern Jeddah, Saudi Arabia, and briefly review the literature on parasitic appendicitis.

Key words. Appendicitis; Entamoeba histolytica

A 7-year-old Pakistani boy living in southern Jeddah, Kingdom of Saudi Arabia was admitted to Ibn Sina College Hospital because of a 24-hour history of fever, recurrent vomiting, generalized abdominal pain, and bloody diarrhea. General examination revealed a toxic child with temperature of 39.5°C, pulse 110 beats/min, respiratory rate 36/min, and blood pressure 95/65 mm Hg, with pallor but no jaundice or cyanosis. Abdominal examination revealed only mild distension and tenderness along the course of the colon. The rest of the physical examination was unremarkable.

Laboratory investigations revealed hemoglobin of 12.8 g/dL, total leukocyte count of 16 600/mm³ with neutrophils 84%, and platelets count of 459 000/mm³. C-reactive protein was elevated positive at 60 mg/L. Blood sugar, serum sodium, potassium, creatinine, and arterial blood gases were normal. Stool examination showed trophozoites of Entamoeba histolytica along with mucus, white blood cells, and red blood cells. Amoebic colitis was confirmed by the presence of E histolytica antigen in stools. Abdominal x-rays and ultrasound examination revealed only distended bowel loops.

A diagnosis of amoebic dysentery was made, and intravenous metronidazole, 30 mg/kg/d, and intravenous ceftriaxone were administered along with antiemetics and antipyretics. After 2 days, fever, vomiting, and loose stools were improving, but abdominal pain persisted and was localized to the right iliac fossa with rebound tenderness and guarding. A repeat abdominal ultrasound showed free peritoneal fluid, and acute appendicitis was suspected. The patient underwent laparoscopic appendectomy, and an inflamed appendix was found; no perforations or other abnormalities were visualized. The child continued to receive metronidazole and ceftriaxone for 1 week postoperatively and recovered uneventfully.

Histological sections of the surgical specimen showed changes typical of acute suppurative appendicitis; in addition, there was mucosal ulceration with multiple round-to-oval E histolytica trophozoites infiltrating the ulcerated mucosa. Many of the trophozoites showed erythrophagocytosis characteristic for E histolytica.

E histolytica cysts were found after screening other asymptomatic family members, and they were treated with diloxanide furoate.

DISCUSSION

Acute appendicitis is the most common general surgical emergency; obstruction of the appendiceal lumen by fecoliths or lymphoid hyperplasia is thought to be the inciting factor of inflammation. Rarely, parasitic...
infection, with either helminths or protozoa, also have been thought to induce appendicitis, presumably from mucosal invasion, luminal obstruction, or some combination thereof [1–6]. The exact role of parasitic infection in causing acute appendicitis is unknown, because the overwhelming majority of parasitic infections do not result in appendicitis, and in some areas of the world parasites are not uncommonly recovered from surgical specimens of bowel resected for reasons other than appendicitis or primary bowel inflammation [2, 3, 7].

There is a considerable range of reported type and prevalence of parasitic appendicitis in both children and adults, which likely reflects differences in parasite endemicity, demographic factors, and differences in histologic examination techniques [1–6, 8–10]. Table 1 summarizes the most commonly reported parasites associated with appendicitis.

The pinworm Enterobius vermicularis is the most common parasite reported to be associated with appendicitis [1–4, 6]. E. vermicularis infection is estimated to affect up to 200 million people worldwide; the reported incidence of pinworm in appendectomy specimens of patients with presumed appendicitis ranges from 1% to 4%, but not all resected specimens show the presence of inflammation [1–6]. Whether Enterobius causes appendiceal pain (colic) rather than obstruction and true appendicitis, or whether female worm ova release contributes to mural inflammation, is unclear [2].

Ascaris lumbricoides-associated appendicitis is likely a sequela of a high intestinal worm load; several cases of appendiceal obstruction and inflammation have been reported [1, 5, 6]. However, the presence of migrating Ascaris in the vermiform appendix is not uncommonly an incidental finding, and is silent in most patients.

Schistosomiasis rarely leads to appendicitis in endemic areas, perhaps from host perappendicular granulomatous inflammation caused by the schistosome; transmural inflammation rich in eosinophils has been described [5, 6]. Other parasites associated with appendicitis in case reports include Trichuris trichiura, Strongyloides stercoralis, tapeworm infection caused by Taenia spp, Balantidium coli, and Blastocystis hominis [3–6].

E. histolytica appendicitis is reported in 0.5%–2.3% of large retrospective series of appendicitis in young adults living in endemic areas [8–15]. Reported cases of amoebic appendicitis are quite rare [8, 9, 11], but publication bias may be contributing to this, because the largest series restricted case enrollment to those >16 years of age [10]. In published reports, a range of descriptions from simple luminal presence of amoeba (presumably with consequent obstruction in vivo) to transmural infiltration with amoebic ulcers is reported [8–15]. Clinical features differentiating appendicitis from amoebic dysentery are difficult to discern, other than perhaps localization of pain to the right lower quadrant.

Neither the boy in the case presented herein nor any member of his family had traveled outside Jeddah over the preceding year, but prolonged latency between infection and the development of invasive disease has been described, and few areas of the world are completely free of amoebiasis. Thus, whether his infection was acquired in Pakistan or Saudi Arabia is unknown. However, the presence of E. histolytica trophozoites with erythrophagocystosis infiltrating the vermiform appendix confirmed the unusual diagnosis of amoebic appendicitis in this child.

**Table 1. Selected Studies of Parasitic Appendicitis**

<table>
<thead>
<tr>
<th>Study Description [Reference]</th>
<th>Parasites Recovered From Appendix</th>
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<tbody>
<tr>
<td>Pathologic review of 25 years of all appendectomy specimens, India (N = 2921) [1]</td>
<td>Enterobius, 41; Entamoeba, 17; Ascaris, 3; Taenia, 2; Trichuris, 2</td>
</tr>
<tr>
<td>5-year review of appendicitis case specimens, Turkey (N = 104) [2]</td>
<td>Enterobius, 4; Entamoeba, 1</td>
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<tr>
<td>10-year review of appendicitis case specimens, Brazil (N = 1600) [3]</td>
<td>Enterobius, 23; Taenia, 1</td>
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<tr>
<td>3-year review of appendicitis cases, South Africa (N = 324) [5]</td>
<td>Schistosomiasis 12; Trichuris, 5; Ascaris, 3; Enterobius, 3; Entamoeba, 2</td>
</tr>
<tr>
<td>5-year review of appendicitis case specimens, Turkey (N = 5262) [6]</td>
<td>Enterobius, 37</td>
</tr>
</tbody>
</table>

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