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CASE REPORT

Invasive Balantidiasis Presented as Chronic Colitis and Lung Involvement

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Balantidium coli is a parasite that commonly infects pigs all over the world (1, 2). Human infection occurs where human contact with pigs is particularly close (3–5), but colitis due to *B. coli* is rare in Western Europe and North America (6–8). We report here a unique case of chronic balantidiasis of the colon with inflammatory polyposis, associated with pulmonary involvement by *B. coli.*

CASE REPORT

A 70-year-old retired builder lived on an Aegean island (Mytilinae) all his life and had for 14 years suffered from bronchial asthma, which required intermittent treatment with antibiotics and steroids. In 1970 he had some episodes of bloody diarrhea that settled without treatment, but in October 1979 he had persistent blood-stained diarrhea, which was presumed to be ulcerative colitis and was successfully treated with oral salazopyrine and steroid suppositories.

In 1981 and 1985 he had two severe episodes of bloody diarrhea treated in hospital. A solitary inflammatory rectal polyp was removed, and a rectal biopsy was reported as compatible with ulcerative colitis. He was successfully treated with salazopyrine and steroid enemas, which he himself soon discontinued.

In May 1985, he was first admitted to our unit with worsening diarrhea. He was now underweight and auscultation of the chest disclosed a few high-pitched wheezing rales. The abdomen was normal. His hematocrit was 37%, ESR 45 mm, blood picture and biochemical profile were normal. Two fresh stool specimens were negative for ova and parasites as well as culture for *Salmonella, Shigella, Campylobacter,* and *Yersinia.* Serum immunoglobulins and T lymphocyte population and subpopulation counts were also normal. A chest x-ray showed a 3-cm mass adjacent to the left hilum. Review of his previous chest x-ray showed that it was present, although smaller. A barium meal follow through was normal.

A colonoscopy to the cecum revealed that in the rectum the mucosa was edematous, very friable, and covered with mucopurulent material. There were numerous confluent mucosal ulcerations and six polyps of 0.3–1.0 cm diameter with eroded tips (Figure 1). This colitis diminished in the sigmoid so that the rest of the colonic mucosa looked normal. In the cecum the mucosa was generally normal, but there were two aphthous ulcers 0.2 cm in diameter near the orifice of the appendix. The endoscopic diagnosis was Crohn's disease involving the cecum and the rectosigmoid colon.

Biopsies of the cecum, sigmoid, and rectum showed a moderate degree of mucosal inflammation, with infiltration of the lamina propia with lymphocytes, plasma cells, and eosinophils and a depletion of mucus and goblet cells. The rectal polyp was quite compatible with an inflammatory polyp; however, within necrotic tissue on its surface, trophozoites of *Balantidium coli* were seen (Figure 2).

A CT scan of the upper abdomen and chest showed a lobulated mass 3.5 cm in diameter at the lower end of the left hilum (Figure 3), which was aspirated with a 22 G diameter needle passed under CT control. The aspirate contained numerous *Aspergillus* hyphae and trophozoites of *B. coli* (Figure 4).

The patient was treated with oral doxycycline HCl (Vibramycin) 100 mg/day for 10 days with marked improvement in diarrhea. He refused surgery for his aspergilloma and was discharged from hospital on ketoconazole (Fungoral) 200 mg/day.

He was well for over a year, passing one to two formed stools per day without mucus or blood and on follow-up sigmoidoscopies the rectal mucosa was granular, like chronic ulcerative colitis in remission. He was then readmitted to our unit because of recurrent asthma, minor episodes of hemoptyses, and diarrhea. His chest x-ray was unchanged and colonoscopy revealed only a mild recurrence of proctitis with edema and contact bleeding. Three more rectal polyps were snared that now showed *B. coli* within the necrotic tissue. He was treated again with doxycycline HCl with improvement of his bowel symptoms.

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Fig 1. Endoscopic view of the rectum with mucosal ulcerations and three polyps with eroded tips.

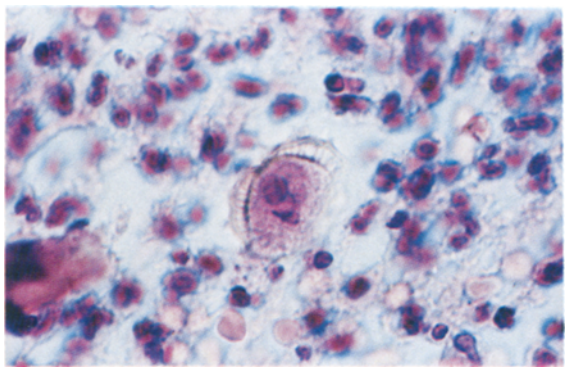

Fig 3. CT scan of the chest showing a lobular mass at the lower end of the left hilum.

DISCUSSION

B. coli is a large ciliated protozoan whose main natural host is the pig (5). Human infections have been reported (9) mainly in the tropics (3–5), North America (7, 10), and Europe (6, 8), although this is the first case identified in Greece. The incidence of the disease in humans is low. Poor environmental sanitation and close contact with pigs appear to be associated with a higher incidence (3–8), although, as in our case, they are not always evident.

Human infection may be asymptomatic or lead to acute or chronic diarrheal disease (10). Extracolonic invasion of lung and/or pleura (11, 12), liver (13), small intestine (7, 11), or appendix, peritoneum, and mesenteric lymph nodes has been reported (6, 12, 14, 15).

Balantidium coli invades the intestinal mucosa by the production of hyaluronidase (16), but tissue penetration by *B. coli* is not always accompanied by necrosis or ulceration. The organisms multiply within the mucosa and submucosa, occasionally penetrating the muscular layer (7). *B. coli* may thus cause a wide spectrum of colonic lesions, ie, shallow or discrete deep ulcers, large hemorrhagic lesions (5–7), severe hemorrhage, or perforation (12, 14). This colitis is indistinguishable from amoebic colitis (7, 8, 17), where even inflammatory polyps (amelomas) can occur. The diagnosis can only be established by proving the presence of trophozoites in stool or tissues. The trophozoite is distinguished from *E. coli* by its size (50–100 μm while *E. histolytica* is 50 μm or less). Specific

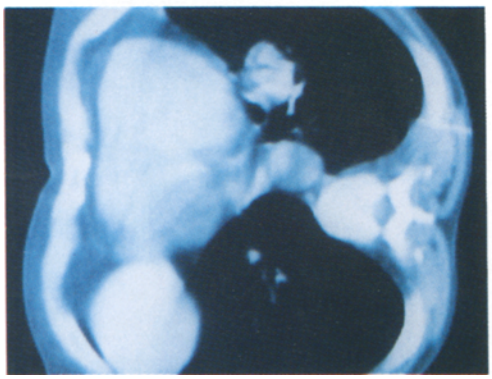

Fig 2. Photomicrograph of biopsy from the rectal inflammatory polyp with trophozoite of *Balantidium coli* in the center of the field (E&H, ×100).

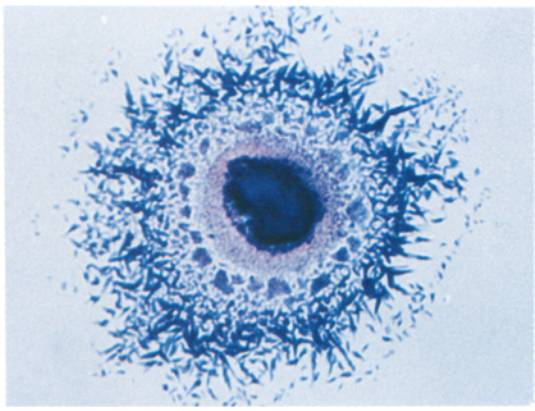

Fig 4. Trophozoite of *Balantidium coli* in the cytology smear (Giesma, ×400). The structure of the parasite has been somewhat damaged during fixation.

immunofluorescent and immobilization methods for identification of stool trophozoites have recently been described (18, 19). Because clinicians consider balantidiasis to be rare and laboratory staff may not be trained to recognize the parasite, the diagnosis is usually missed at first (14, 15, 20). This is disastrous because balantidiasis is easily treated but may be severe and even fatal (7, 8, 12, 14, 15) if neglected.

This is the first report of human balantidiasis in Greece, and it is unique because it was presented as chronic colitis with inflammatory polyps in the rectosigmoid colon. It might be argued that the patient had chronic ulcerative colitis superinfected by *B. coli,* however, the dramatic and repeated response of the disease to treatment with doxycycline alone renders this hypothesis unlikely. In our patient the disease was further complicated by an inflammatory mass in the lung containing both *B. coli* and *Aspergillus*. We postulate that this was primarily a *B. coli* infection and that *Aspergillus* was a secondary infection, because *Aspergillus* usually infects a preexisting lung cavity.

It has been suggested that debility, intercurrent disease, or malnutrition is necessary for tissue invasion to occur by *B. coli* (6). None of these factors existed in our patient, and there was no particular reason in this case to consider specific infections or zoonoses. He had lived all his life in an area with no endemic disease (Mytilinae island) and had never kept pigs.

Our patient provides a useful lesson. He had multiple medical consultations and admissions to general hospitals and had been misdiagnosed as suffering from ulcerative colitis and might have died of fulminant balantidial colitis. Clearly, such potentially serious protozoal infections require clinicians and pathologists to remain vigilant.

SUMMARY

A unique case of chronic balantidiasis is described, presenting with chronic colitis and inflammatory polyposis of the rectum and sigmoid colon and an intrapulmonary mass. Histology of the colonic polyps showed *Balantidium coli,* and both *Aspergillus* and *Balantidium coli* were found in the aspirate of the pulmonary mass. The patient was treated with doxycycline HCl 100 mg/day for 10 days with complete clinical recovery and marked improvement of the endoscopic appearance of the colonic mucosa.

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