NOTES

Common Bile Duct Obstruction Secondary to Infection with *Candida*

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A patient is reported who had biliary tract obstruction secondary to infection of the common bile duct with *Candida albicans*, with the formation of a fungus ball. Treatment consisted of surgical removal of the fungus ball and drainage. Chemotherapy was not necessary. Ureteral obstruction through fungus ball formation, and even pulmonary fungus ball formation, has been attributed to candida, but this is the first case reported, to our knowledge, of bile duct obstruction.

Candida species are frequently isolated from humans, but much less frequently cause clinical disease. The spectrum of clinical syndromes resulting from candida infections range from superficial invasion (i.e., pharyngitis, dermatitis, vaginitis, or cystitis) to disseminated disease, where multiple deep organs may be invaded (1, 4-7). In addition, candida urinary tract infections have been known to cause obstruction of the ureters by fungus ball formation (3), and pulmonary fungus balls have been caused by *Candida* spp. (2). The purpose of this report is to present the first case of biliary tract obstruction and concurrent candida infection of the common bile duct with formation of a fungus ball.

Case Report

A 61-year-old woman presented the chief complaint of upper abdominal pain of 3 days duration. The patient was in excellent health until September 1974, when she noted the onset of crampy lower abdominal pain. She underwent an exploratory laparotomy and low anterior resection of an adenocarcinoma (Duke's grade II) of the colon. Postoperatively, the patient did well, and did not receive radiation or chemotherapy.

In March 1976, the patient developed 3 days of crampy, aching left upper quadrant pain which radiated to her back. There were no other pertinent symptoms. She had not received antibiotics or corticosteroids.

Past history is of note in that the patient had

a cholecystectomy in 1944 following episodes of right upper quadrant pain.

Vital signs showed a pulse of 68/min and regular blood pressure of 140/70 mmHg, respirations of 12/min, and a temperature of 37.6°C. Positive physical findings were limited to the abdomen, where there was tenderness to deep palpation in the left upper quadrant without radiation. The remainder of the abdomen was soft and nontender, with mild referred pain to the left upper quadrant. Bowel sounds were normal.

Laboratory examination showed hemoglobin, 16.8 g/100 ml; hematocrit, 48.9%; leukocyte count, 8,100 mm³ (with 66% polymorphonuclear leukocytes, 3% band forms, 1% eosinophiles, 3% monocytes, and 27% lymphocytes); bilirubin, 6.8 mg/100 ml; conjugated, 3.42 mg/100 ml; alkaline phosphatase, 301 IU; lactic dehydrogenase, 297 IU; serum glutamic oxaloacetic acid transaminase, 160 Karmen units; amylase, 84 IU; and 5'-nucleotidase, 45 IU. A fasting blood sugar was 100 mg/100 ml.

An intravenous cholangiogram revealed visualization of the common duct on the 20-min film. Tomographic films taken at 50 min revealed the common duct dilated with a diameter of 20 mm. At the distal end of the common bile duct, an intraluminal filling defect, with smooth borders, was identified.

Other laboratory studies and X-rays, including a liver scan, were negative or unrevealing.

The patient subsequently underwent an exploratory laparotomy and common duct exploration. At surgery, she was found to have an amorphous mass obstructing the lumen of the common duct.

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Pathological examination of the gross specimen revealed multiple irregular pieces of greenish-black, soft material, approximately 1.5 cm in diameter. Microscopically, the specimen consisted of amorphous material containing hyphae and yeast forms, consistent with a *Candida* species.

Culture of the bile at the time of surgery yielded numerous colonies of *Candida albicans*. *C. albicans* continued to be isolated from the T-tube drainage postoperatively, for approxi-

mately 10 days. All other cultures were negative. *Candida* immunodiffusion and agglutination tests (8) were also done, and were negative.

The patient recovered uneventfully, and was not treated with antifungal agents or antibacterial therapy.

It has long been observed that candida may obstruct the urinary tract by the formation of fungus balls within the ureters. In our review of the medical literature, we have not found a case of obstruction of the biliary tree by a candida

FIG. 1. (A) Section of common bile duct stone showing yeast forms and hyphae (magnified $\times 100$). (B) Insert from (A). Yeast forms and hyphae (magnified $\times 400$).

fungus ball.

Our patient clearly had clinical, laboratory, and X-ray findings of biliary obstruction; surgical exploration confirmed this. Postsurgical examination of the obstructing mass revealed both pathological and microbiological evidence for *C. albicans* infection. Chemical analysis of the material is not available. It is possible that pigmented stone formation contributed to the development of biliary obstruction in this patient, either by acting as a nidus for fungus ball formation or by developing around the fungus ball (Fig. 1). It is interesting that our patient had none of the predisposing factors which lead to the development of candida infections in the urinary tract and elsewhere (1-8). The patient had not recently received broad-spectrum antibiotics or corticosteroids (8). She was neither neutropenic nor diabetic, and, finally, there was no evidence of hematogenous spread of candida to the liver or biliary tract.

Therapy in this case consisted of removal of the obstruction and T-tube drainage of the common bile duct for a period of 21 days. She received no additional therapy, including no systemic amphotericin B. The patient has subsequently been followed by us for 9 months, without recurrence or further evidence of biliary tract disease.

This is the first reported case of common bile duct obstruction and concurrent *C. albicans* fungus ball. It is also significant that the patient had no apparent underlying immunological defect, and no predisposing factors for colonization or invasion by *Candida* species. The patient did not require therapy other than drainage for apparent complete cure.

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