Systemic illnesses unexpectedly presenting as acute appendicitis: case studies

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Case 1

A 37-year-old woman had a 2-month history of fatigue and debilitating dizziness. Her serum hemoglobin was 68 g/L, and her white blood cell count was 208 (10^9/L). Flow cytometry of a bone marrow aspirate revealed an acute myelogenous leukemia. Febrile neutropenia required the administration of ciprofloxacin and piperacillin-tazobactum 48 hours into induction chemotherapy. Subsequent febrile neutropenia, now with rigors; a dry cough; anorexia; nausea; right flank pain and diarrhea occurred on the eighth day of antibiotics. Urine and blood cultures were negative. Amphotericin B was empirically added to the regimen. An ultrasound performed because of persistent fever and right-sided abdominal (RLQ) pain revealed a 9-mm, noncompressible appendix. Laparoscopic surgery procured an edematous appendix (Fig. 1). A postoperative CT scan showed multiple liver and spleen opacities, indicative of hepatosplenic candidiasis. A 10-day course of amphotericin B was followed by fluconazole.

Case 2

A 53-year-old woman had 3 days of nausea,

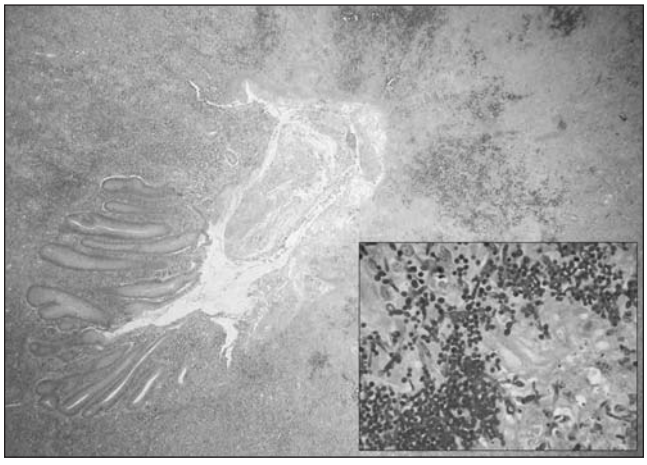

FIG. 1. Histology revealed mucosal ulcers and serosal adhesions compatible with appendicitis (periodic acid schiff, 4×). Spores and pseudohyphae of *Candida sp.* were in the ulcer bed and invaded submucosal vascular structures (inset, periodic acid schiff, original magnification 40×). No acute inflammation, granulomatous reaction or leukemic infiltrate was identified.

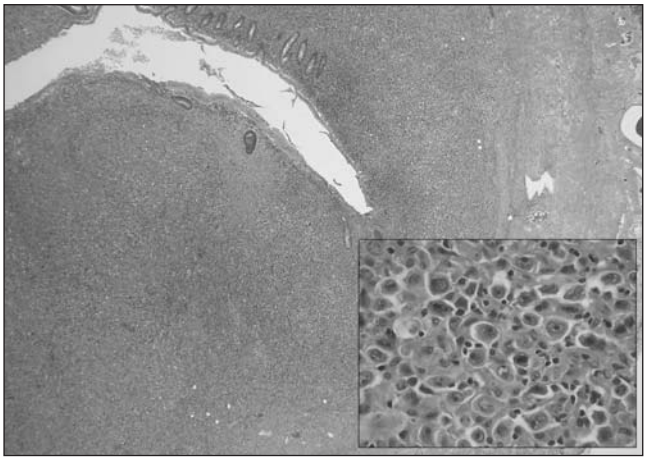

FIG. 2. The 2.4-cm distal appendix mass was a sheet of large neoplastic lymphoid cells ulcerating mucosa, effacing muscularis propria, invading lymphatics and the serosa (hematoxylin and eosin, 2×). Neoplastic cells had large, sometimes multilobated vesicular nuclei and thick, irregular nuclear membranes (inset, hematoxylin and eosin, original magnification 40×). Immunohistochemistry confirmed a B-cell derivation of the neoplasm. Epstein-Barr virus–encoded ribonucleic acid was detected by in situ hybridization in neoplastic nuclei.

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anorexia and predominantly RLQ abdominal pain after receiving 1 cycle of chemotherapy for a recently diagnosed left axilla node posttransplant lymphoproliferative disorder (PTLD), diffuse large B-cell type. She had had a related donor renal transplant in 1988 for end-stage immunoglobulin A nephropathy. Mycophenolate, cyclosporine and prednisone therapy was reduced subsequent to the diagnosis of the PTLD. Examination revealed a tender lower abdomen and a low-grade fever. She had a neutropenia level of 0.7 (10^9/L) and was treated with granulocyte colony-stimulating factor, piperacillin-tazobactam and a stress dose of steroids. A contrast CT of the abdomen revealed an appendix with wall thickening and edema. Laparoscopy identified a distended and perforated appendiceal tip. Histology of the mass was identical to that of the axilla node PTLD diagnosed 2 months earlier (Fig. 2).

Discussion

Disseminated candidiasis is a common cause of failure to achieve primary remission in the treatment of hematogenous malignancies.[1] It classically presents as a fever of unknown origin in a neutropenic patient and is unresponsive to broad-spectrum antibiotics.[1] The gastrointestinal tract is an important route of dissemination because mucosal damage is deemed a prerequisite for visceral candidiasis.[1] Dissemination typically manifests as hepatosplenomegaly with small, discrete, low-attenuated nodules identifiable by MRI or CT scan, occurring in the liver and spleen (63%), liver only (22%) or spleen only (15%).[1] Imaging studies successfully identify 90% of cases whereas blood cultures and tissue biopsy are considered unreliable.[2] Our case 1 is an original description of acute disseminated candidiasis involving the appendix, liver and spleen.

The gastrointestinal tract is one of the most common sites for extranodal lymphoproliferative disorders.[3] However, in a series of 117 gastrointestinal lymphomas, only 2 (0.85%) had an appendiceal origin.[4] Primary lymphomas are more common than secondary lymphomas, and their presentation resembles that of acute appendicitis.[4] Common sites for PTLD involvement include the gastrointestinal tract (32%), liver (32%) and bone marrow (25%).[5] To the best of our knowledge, case 2 is the first report of PTLD of the appendix.

Acute disseminated candidiasis and PTLD are systemic diseases classically afflicting multiple viscera, including the gastrointestinal tract. However, there is no literature describing appendiceal involvement by either process. Verification of appendiceal candidiasis resulted in prolonged antifungal therapy for systemic disease, which potentially limited morbidity. Our case report of appendiceal PTLD acknowledges a novel site for such a tumour.

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