A 56-Year-Old Woman with Rash, Paralytic Ileus, and Massive Gastrointestinal Bleeding

(See pages 1094–5 for the Photo Quiz.)

Figure 1. Diffuse maculopapular rash that appeared simultaneously with high fever, progressive abdominal distention, and massive gastrointestinal bleeding.

Diagnosis: Strongyloides stercoralis hyperinfection syndrome in a patient with human T lymphotropic virus type 1 (HTLV-1) infection.

The duodenal sample obtained through a nasogastric tube showed multiple filariform larvae of Strongyloides stercoralis (figure 1; figure 2). Enzyme-linked immunosorbent assay (ELISA) test for toxins of Clostridium difficile had negative results, and stool cultures for bacteria showed no growth. Cultures of blood samples obtained during the abdominal catastrophe were positive for Escherichia coli.

Strongyloidiasis is a parasitic disease that is caused by the soil-transmitted nematode S. stercoralis, which is estimated to affect almost 300 million people worldwide. Once infected, humans may harbor the parasite for decades. Most of the infections due to S. stercoralis are asymptomatic or mildly symptomatic. However, in the presence of immunosuppressive conditions (such as high-dose steroid use, use of cytotoxic drugs, malignancies, human immunodeficiency virus infection, malnutrition, and more recently, HTLV-1 infection), an autoimmune cycle may ensue that amplifies the infection and leads to the hyperinfection syndrome [1]. Multiple erosions in the colonic mucosa result from the migration of the filariform larva across the intestinal wall and may induce massive bleeding, which is associated with significant mortality [2].

The family history of T cell leukemia lymphoma in this patient raised the suspicion of HTLV-1 infection, which was confirmed by means of an ELISA and Western blot tests. The patient recalled that her sister had also been infected with HTLV-1. Further evaluation of her relatives revealed that 2 of her 3 sons were also HTLV-1 positive, as were 3 of her 5 brothers. Acquisition through breast feeding may explain the high attack rate of infection observed in this family. A marked T cell activation with predominance of Th1 response (characterized by increased production of interferon γ and tumor necro-
sis factor α) over Th2 response (characterized by production of interleukin [IL]–4, IL–5, IL–10, and IL–13, high eosinophil response, and elevated levels of immunoglobulin E) is the immunological hallmark of HTLV-1 infection [3]. The blunted Th2 response observed in patients with HTLV-1 infection is associated with severe helminthic infections, in particular with *S. stercoralis* infection. The association between HTLV-1 infection and *S. stercoralis* was recognized initially in Japan >2 decades ago [4], with further recognition in other areas of the world in which HTLV-1 infection is endemic. However, conclusive evidence of the impact of HTLV-1 infection on the severity of *S. stercoralis* infection has been reported more recently from Peru [5]. In that study, patients with *S. stercoralis* hyperinfection syndrome had a prevalence of HTLV-1 infection that was 8 times greater than the prevalence of HTLV-1 infection among patients with simple *S. stercoralis* infection.

Our patient was treated with broad-spectrum antibiotics and intensive care support. The oral route for providing ivermectin or thiabendazole was precluded in this patient because of the paralytic ileus. In extreme situations that resembled our case, several case reports disclosed good therapeutic response to a subcutaneous route of ivermectine given by the subcutaneous route [6–9]. Subcutaneous administration followed by oral treatment with ivermectine was instituted, and the patient recovered uneventfully; however, she developed T cell leukemia lymphoma 1 year later and died after 6 months of unsuccessful chemotherapy and antiviral treatment.

One question remains unanswered in this case. Is there a relationship between the acute meningitis episode and the hyperinfection syndrome? It is tempting to assume that the hyperinfection syndrome caused the dissemination of the parasite and bacteria to the meninges. However, no larvae or bacteria were identified in the cerebrospinal fluid samples obtained at hospital admission. Another possible explanation of the clinical events is that the patient had chronic asymptomatic strongyloidiasis, to which they were predisposed by HTLV-1 coinfection, and presented with acute meningitis that was not related to the parasitic infection. The hyperinfection syndrome might have been aggravated by the use of high-dose steroids.

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### References