Eosinophilic gastroenteritis with cytomegalovirus infection in an immunocompetent child

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CASE REPORT

A 3-year-old boy was referred to our hospital for evaluation of hypoproteinemia and edema. He had experienced allergic reactions to milk, soybeans, shrimp and pork. His initial symptoms of diarrhea and edematous swelling of the eyelids developed during one week before admission. Physical examination revealed periorbital and pretilial edema. His abdomen was slight distended. The liver and spleen were not palpable. Abdominal ultrasound detected a small amount of ascites and mild swelling of the mesenteric lymph nodes. On laboratory examination, the white blood cell count was 11 300/mm$^3$, with 24% eosinophils. Total serum protein concentration was 3.2 g/dL, with an albumin concentration of 1.8 g/dL. Serum IgE level was within normal limits (24 IU/mL). RAST for specific IgE antibodies and skin prick test failed to reveal reactions to common food antigens. The results of a serological test for CMV were positive for IgM and IgG. Stool samples showed normal flora on culture and the absence of blood, H pylori antigen, ova and parasites. Enteric protein loss was confirmed by a fecal α1-antitrypsin clearance of 68.8 mg/d (normal, < 20 mg/dL). We excluded urinary protein loss as a cause of the hypoalbuminemia. Upper GI endoscopy showed multiple erosions with abundant whitish mucus throughout the gastric body. Enlarged gastric folds were not observed. The esophagus exhibited no remarkable change and the duodenum appeared mildly reddened. A sigmoidscopy showed mucosa with a normal vascular pattern and a mild lympho-nodular appearance. Histological examination of the biopsy specimens indicated eosinophilic gastroenteritis and CMV infection. The patient had complete resolution without specific therapy for CMV in four weeks. An allergic reaction as well as CMV infection played important roles in the pathogenesis of this case.

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Key words: Eosinophilic gastroenteritis; Cytomegalovirus; Protein-losing gastroenteropathy; Allergy; Menetrier’s disease

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INTRODUCTION

Eosinophilic gastroenteritis (EG) is a chronic inflammatory disorder of the gastrointestinal (GI) tract characterized by the infiltration of eosinophils. Klein et al$^{1}$ proposed classification of EG based on the depth of eosinophil infiltration; mucosal, muscular and serosal. The mucosal disease tends to present with protein-losing gastroenteropathy (PLG). As for pathogenesis, an allergic mechanism has been implicated in many cases$^{2,3}$. A viral etiology has also been suggested in several cases$^{4,5}$. In this report, we present a case of PLG caused by allergy- and cytomegalovirus (CMV)-related EG in a 3-year-old boy.
weeks. The endoscopic abnormalities also subsided after four weeks of hospitalization. Histological assessment of the mucosal biopsy specimens demonstrated clearing of the eosinophilic infiltration. He had no recurrences in the subsequent 36 mo.

DISCUSSION

CMV infection in the GI tract is unusual in an immunocompetent person. Primary infection with CMV is generally asymptomatic and usually remains latent for life. If host immune defenses are impaired, latent CMV may be activated and produce symptoms of overt disease. GI tract infection with CMV usually occurs in immunocompromised patients by activation of the latently infectious virus. On the other hand, there are several reports of CMV infection in normal healthy persons and the important role of CMV in the acute gastrointestinal disease has been emphasized[8]. In our case, evidence of gastric CMV involvement was shown by histological findings of characteristic inclusion bodies and by the immunohistochemical detection of viral antigens. It was likely that mucosal disruption due to allergic mechanism facilitated the CMV infection, which then led to further injury. As well, CMV infections in the GI tract might be locally cytotoxic, possibly allowing mucosal penetration of allergens that then stimulated the allergic reaction.

Allergy has been suggested as the cause of transient PLG in children[9]. However, the target allergens in our patient were unclear; serum RAST and skin prick tests against common food allergens were all negative. Lin et al[10] suggested that a localized IgE-mediated response could cause the gastrointestinal symptoms seen in skin-prick test-negative and serum IgE antibody-negative patients with suspected food allergy.

EG may present with a wide variety of clinical and endoscopic findings. However, the multiple erosions throughout the body of the stomach seen in our patient are unusual for EG; commonly endoscopic findings of EG are edema, erythema and erosions in the antrum of the stomach. Only one case of EG with similar endoscopic features has been reported[9]. Additionally, the clinical course of our case was unusually benign and short for EG; patients with EG usually have a prolonged course of relapse and remission and for control may require therapy with steroids.

Menetrier's disease is another common cause of PLG. Allergic phenomena and CMV infection have been implicated in pediatric cases[5,9], and the course of the disease in children, unlike that in adults, is usually benign and short[9]. EG and Menetrier's disease exhibit several common features in childhood, leading to the assumption that they may represent a continuum of gastroenteropathy associated with allergic mechanism.

Although our patient remains well, he requires long-term follow-up since the natural history of this condition remains unclear. Kristopaitis et al[10] reported a case of EG in a 24-year-old female, who had experienced infantile EG, that recurred after a long period of dormancy.

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