Cytomegalovirus-Induced Gastritis in a Bone Marrow Transplant Patient

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Cytomegalovirus (CMV)-induced interstitial pneumonitis is a well-known lethal complication in bone marrow recipients. CMV is also known to cause gastroenteritis. We report the first case of a bone marrow recipient who developed CMV-induced gastritis which is verified both histologically and virologically. The gastritis preceded the interstitial pneumonitis which was detected in an early stage and was successfully treated. We propose that bone marrow recipients who show signs and symptoms of gastritis undergo an endoscopic examination, and that biopsied specimens should be scrutinized for CMV by both histological examination and culture investigation.

Key words: Interstitial pneumonitis, Inclusion body, Viral culture

Patients with hematological disorders or other malignant diseases have been successfully treated by bone marrow transplantation after pretreatment by radiation and chemotherapy (1). Although the pretreatment ensures graft survival and eradication of tumor cells in malignant diseases, it renders the recipient prone to opportunistic infections. Cytomegalovirus (CMV)-associated interstitial pneumonitis is one of the common complications in such immunocompromised patients (2, 3) and CMV-induced gastritis has also been reported in some cases after bone marrow transplantation (4, 5). The diagnosis of CMV-gastritis in those cases was mainly based on the detection of inclusion bodies in mucosal cells, capillary endothelial cells or stroma cells (4, 5). We report here a case of CMV-induced gastritis in which CMV was cultured from the biopsy specimen of the stomach containing inclusion bodies and was followed by subclinical interstitial pneumonitis.

CASE REPORT

A 45-year-old man with acute non-lymphocytic leukemia received a marrow graft from his HLA-identical brother. The patient’s anti-CMV antibody titer before the transplantation was 1:16 by complement fixation (CF) and IgG titer was 1:40 by enzyme-linked immunosorbent assay (ELISA). In the second week after the transplantation, marrow engraftment was documented by the recovery of peripheral and bone marrow cells; erythematous papules and diarrhea then developed. Skin biopsy at this time revealed typical acute graft versus host disease. In the third week, the patient noticed mild epigastric pain which ameliorated within several days. In the seventh week, he complained of...
epigastric pain and the stool was positive for occult blood examination. Barium study of the stomach in the ninth week revealed a nodular mucosal pattern and barium flecks (Fig. 1). Endoscopic examination in the eleventh week revealed extremely hyperemic and friable gastric mucosa, multiple gastric erosions and ulcers (Fig. 2). Sections of the biopsy specimen showed the presence of intranuclear inclusion bodies which is characteristic of CMV infection (Fig. 3). Gastric mucosa, biopsied from the ulcer margin the following week, was minced in saline and inoculated into cultures of human embryo fibroblasts which were maintained in media supplemented with 5% heat-inactivated fetal calf serum. Using the monoclonal antibody conjugated with fluorescein isothiocyanate (FITC), CMV was identified by the culture cells which developed cytopathic changes. Chest x-ray film taken in the eleventh week showed fine granular shadows in a small area of the left lower lung field and obscure vascular marks on the left lower lobe. Broncho-alveolar lavage (BAL) and transbronchial biopsy were performed. Sections of biopsy specimens revealed interstitial pneumonitis but no inclusion bodies were found. No CMV was cultured from either BAL fluid nor biopsy specimen. CMV titer was elevated to 1:1024 (CF) and 1:640 (ELISA) during these periods. The patient was treated with gamma-globulin which contains high titer of anti-CMV antibody, corticosteroids, H₂-blockers and antacids. Endoscopic examinations after the treatment revealed improvement of gastric lesions and no inclusion bodies were found microscopically. Chest film was also normalized. He is well now without any major problems.

**DISCUSSION**

CMV is known to cause interstitial pneumonitis, gastroenteritis, and other disorders in immunocompromised patients. The diagnosis of such CMV infection is usually based on either histological demonstration of characteristic inclusion bodies (2, 434...
4, 5) or a positive culture of CMV from the infected tissue (6–8), but in the reports few bone marrow recipients were shown to be positive in both tests. To our knowledge, our case is the first one in which CMV gastritis was diagnosed by both histological examination and viral culture.

More interestingly, CMV infection in our case was initially manifested as gastritis, and then interstitial pneumonitis developed. As the deterioration and improvement on the chest film findings occurred simultaneously with those of the clinical course of gastritis, CMV could also be the causative organism of the interstitial pneumonitis in this case. Because the detection of CMV in the gastric lesions preceded the pneumonitis, an early diagnosis of the pneumonitis was made prior to the presence of clinical symptoms, and the pneumonitis was successfully treated before it became severe.

When patients who underwent bone marrow transplantation show signs and symptoms of gastritis, we recommend that endoscopy and biopsy examinations are performed. We also propose that the biopsied gastrointestinal lesions are scrutinized for CMV by both histological examination and culture investigation as this may facilitate the recognition of CMV-induced disease at an early stage and treatment may be begun before more severe complications ensue.

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REFERENCES