Case Report

Disseminated Varicella zoster infection with abdominal pain and periarterial fat stranding in a patient taking pomalidomide

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Background: Disseminated Varicella zoster virus infection (DVI) is a severe infection associated with severe abdominal pain of unknown cause. We report a case in which periarterial (the celiac artery and superior mesenteric artery) fat stranding (PFS) on computed tomography (CT) was the presumed cause of abdominal pain in a patient taking pomalidomide.

Case Presentation: A 62-year-old woman was admitted to our hospital with abdominal pain. Her medical history was multiple myeloma treated with pomalidomide. Computed tomography showed no remarkable findings on admission, but 1 day later, a contrast-enhanced CT showed PFS. A skin eruption appeared on day 4 and we started acyclovir. On day 10, Varicella zoster virus antigen and antibody tests were positive, confirming the diagnosis of DVI. The abdominal pain subsequently improved, together with the PFS, and she was discharged.

Conclusion: When patients present with severe abdominal pain and PFS, DVI and acyclovir must be considered.

Key words: Abdominal fat, gastroenterology and hepatology, pomalidomide, sepsis/multiple organ failure, Varicella zoster virus infection

INTRODUCTION

DISSEMINATED VARICELLA ZOSTER virus (VZV) infection (DVI) is a severe form of the disease that can take a complicated course, including progression to multiple organ failure.[1] However, the diagnosis is difficult because the characteristic rash of VZV is typically absent in the initial stages. In 82–100% of cases, DVI develops with acute severe abdominal pain, leading to the potential for misdiagnosis as an acute abdomen.[2] Misdiagnosis can be critical given that the prognosis is worse when antiviral therapy is delayed.[1] Although several causes have been proposed, the reason for the severity of this pain is poorly understood. Although DVI mainly develops in patients receiving immunosuppressive or immunomodulatory therapy,[3] we could not find any reports of DVI occurring during treatment with pomalidomide.

In this case report, we detail the first case of DVI in a patient taking pomalidomide. We considered that the cause of severe abdominal pain in DVI might be periarterial fat stranding (PFS) around the celiac artery (CA) and superior mesenteric artery (SMA) on computed tomography scan (CT).

CASE REPORT

A 62 -year-old woman was admitted to our hospital with a 3-day history of abdominal pain. Her medical history included multiple myeloma that was in complete remission, but for which she received pomalidomide and trimethoprim-sulfamethoxazole.

On presentation, her vital signs were as follows: Glasgow Coma Scale, 15 (E4 V5 M6); body temperature, 36.4°C; blood pressure, 175/90 mmHg; heart rate, 63 b.p.m.; and respiratory rate, 22 breaths/min. Abdominal examination revealed tenderness of the epigastrium and left abdomen,

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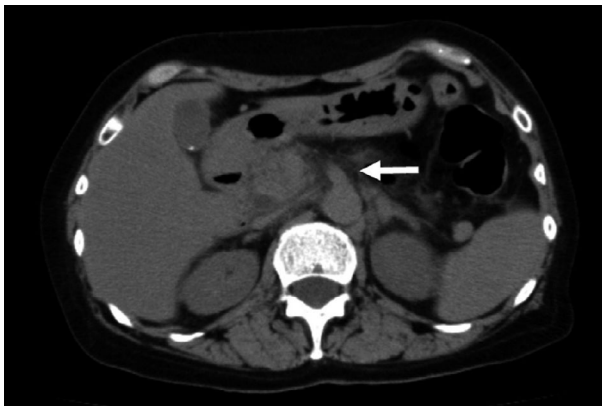

Fig. 1. Fat stranding around the celiac and superior mesenteric arteries on the day after hospitalization of a 62-year-old woman with disseminated Varicella zoster infection. Periarterial fat stranding appeared around the superior mesenteric artery (arrow) on the day after hospitalization.

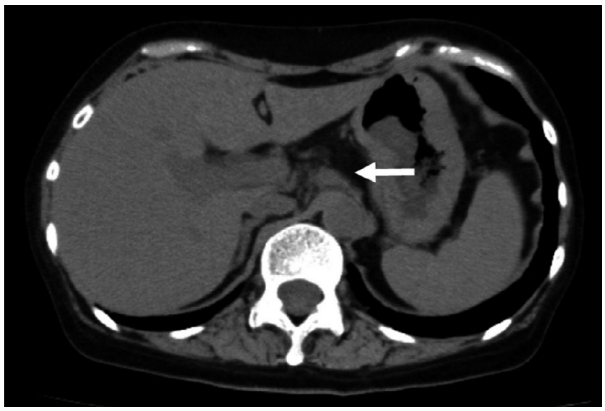

Fig. 2. Fat stranding around the celiac and superior mesenteric arteries on day 21 of hospitalization of a 62-year-old woman with disseminated Varicella zoster infection. Periarterial fat stranding remained around the superior mesenteric artery (arrow) on day 21 of hospitalization.

but without swelling or guarding. Skin and other examinations were unremarkable.

Abdominal non-contrast CT was unremarkable at admission. Laboratory testing revealed the following: white blood cell count, 2,100/μL; platelet count, 127,000/μL; aspartate transaminase, 24 IU/L; alanine transaminase, 23 IU/L; amylase, 77/L; and C-reactive protein, 0.12 mg/dL. No coagulopathy was observed.

The initial examination and investigation therefore failed to uncover a clear cause for her symptoms. She was admitted to hospital for observation because the pain was severe and did not improve despite receiving acetaminophen and buprenorphine.

The day after hospitalization, several hours after the first CT, a contrast-enhanced CT was undertaken because the pain deteriorated. This showed PFS of the CA and SMA (Fig. 1). On day 3, thrombocytopenia (platelet count 17,000 μg/dL) were observed. On day 4, an eruption appeared around the abdomen, but without blistering. On day 5, elevated aspartate transaminase (3,248 IU/L) and alanine transaminase (1,732 IU/L) were observed, and fever developed with neutropenia (neutrophil count, 324/μL). Therefore, we started therapy with meropenem, linezolid, and caspofungin. Following this, the skin eruption spread over the face, body trunk, and limbs, and some blisters also erupted. Although these were not characteristic of a typical Varicella rash, we suspected DVI and started acyclovir. On day 7, the patient's body temperature normalized and she reported that the abdominal pain had improved. On day 10, VZV antigen and antibody tests were positive, confirming the diagnosis of DVI. The skin eruptions began crusting on the same day. On day 14, acyclovir therapy was stopped and blood tests showed that the patient's liver enzymes had normalized. On day 21, although the abdominal pain had disappeared, the patient reported feeling "strangeness" in the area where the pain had been, so we carried out a non-contrast CT. Although PFS remained, it had improved (Fig. 2). All the patient's laboratory data were normal on day 35, and she was discharged. On day 41, upper gastrointestinal endoscopy revealed no abnormal findings. Follow-up CT at the same time also showed that PFS had almost disappeared (Fig. 3).

DISCUSSION

WE ARE NOT aware of any previous case reports of DVI presenting with severe abdominal pain in a patient taking pomalidomide. In addition, the suggestion that PFS of the CA and SMA might have been the cause of the abdominal pain is a novel consideration.

First, we found no reports that DVI has occurred in patients receiving pomalidomide, which is a derivative of thalidomide. Pomalidomide is anti-angiogenic and also acts as an immunomodulator. Pomalidomide is used as a treatment for relapsed and refractory multiple myeloma. There are, however, studies of DVI occurring in patients receiving thalidomide.[4]

Second, we propose that PFS of the CA and SMA was the cause of the severe abdominal pain. There have been several reports of other potential causes, including infection and inflammation of the celiac ganglia, hemorrhagic spots on the liver and upper gastrointestinal tract, and infection of

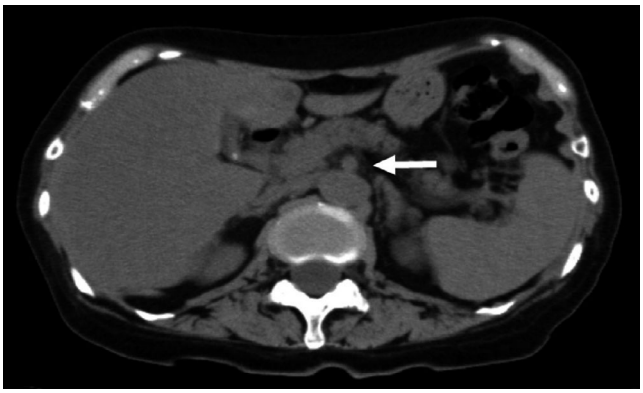

Fig. 3. Fat stranding around the celiac and superior mesenteric arteries on day 41 of hospitalization of a 62-year-old woman with disseminated Varicella zoster infection. Periarterial fat stranding around the superior mesenteric artery (arrow) had almost disappeared by day 41 of hospitalization.

the esophagus and gastric mucosa.[5–7] However, none of these abnormal findings were observed on CT or upper gastrointestinal endoscopy. There has been one case report in Japanese publications of PFS of the CA and SMA in immunocompromised patients with DVI and severe abdominal pain,[8] but this earlier report also showed expansion of the small and large intestines. These abnormal findings were not present at admission, only appearing on day 5, and they resolved as the abdominal pain settled. Moreover, intestinal dilation was a plausible alternative cause of the abdominal pain. By contrast, intestinal dilation was never observed in our case, with infection and inflammation around the CA and SMA being the only demonstrable cause. Thus, the present case represents the first report in the English literature of PFS as a potential cause of severe abdominal pain in DVI.

Disseminated Varicella zoster virus infection is clinically and serologically diagnosed as typical varicella, however, diagnosis is complicated by the lack of a characteristic rash at onset.[2] In recent years, diagnosis has become available by polymerase chain reaction, allowing diagnosis before the rash appears.[8] This is important because the prognosis is poor when antiviral drug therapy is delayed.[2] In our case, acyclovir was started on day 5, and the patient might not have survived if there had been further delay in receiving appropriate therapy. Thus, it is important to suspect DVI and to give empiric acyclovir therapy when immunocompromised patients present with severe abdominal pain of unknown etiology, even in the absence of a characteristic rash.

In conclusion, this case prompts us to make two important clinical suggestions. First, clinicians should consider that patients receiving pomalidomide could be at increased risk of developing DVI. Second, the presence of PFS of the CA and SMA might reflect the pathology underlying the severe abdominal pain in at least some cases of DVI. When patients present with severe abdominal pain and the CT findings reported in this case, DVI and the need for empiric acyclovir therapy must be considered. Further reports are needed to determine whether the CT findings of PFS of the CA and SMA are a consistent cause of severe pain and whether DVI is common in patients taking pomalidomide.

DISCLOSURE

Approval of the research protocol: N/A.
Informed consent: Informed consent was obtained from the patient for publication of this case report.
Registry and registration no. of the study/trial: N/A.
Animal studies: N/A.
Conflict of interest: None.

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