LETTER TO THE EDITOR

Korean J Intern Med 2016;31:403-405
http://dx.doi.org/10.3904/kjim.2014.355

Microscopic polyangiitis with crescentic glomerulonephritis initially presenting as acute pancreatitis

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To the Editor,

Microscopic polyangiitis (MPA) is characterized by the involvement of a wide range of blood vessels including arterioles, venules, and capillaries. Necrotizing glomerulonephritis and alveolar hemorrhage are commonly seen in patients with MPA, which may concomitantly or sequentially involve the nervous or musculoskeletal systems as well as other organs including the skin, heart, eyes, and intestine [1]. However, symptomatic pancreatic involvement in cases of anti-neutrophil cytoplasmic antibody (ANCA)-associated glomerulonephritis is extremely rare [2]. We herein report a case of MPA with crescentic glomerulonephritis that initially presented as acute pancreatitis.

A 59-year-old Korean woman visited the Emergency Department in Presbyterian Medical Center for evaluation of epigastric pain and vomiting. She had a 20-year history of type 2 diabetes mellitus. On admission, she had a temperature of 37°C, pulse rate of 105 beats per minute, blood pressure of 140/80 mmHg, and respiratory rate of 18 breaths per minute. Her eyes were sunken, and her skin turgor was diminished. Her blood urea nitrogen and serum creatinine levels were 12.5 mmol/L (reference, 2.8 to 7.1) and 640 μmol/L (reference, 50 to 110), respectively. Her serum creatinine level 1 month earlier was 50 μmol/L. Her serum concentration of C-reactive protein was 82.9 mg/L (reference, < 3), and her serum amylase and lipase levels were 825 U/L (reference, 28 to 100) and 927 U/L (reference, 13 to 60), respectively. Alanine aminotransferase and bilirubin were normal. A routine chest X-ray showed slight haziness in the bilateral lung fields. Both kidneys exhibited mildly increased renal parenchymal echogenicity and normal size. To evaluate for possible pancreatitis, we performed abdominal computed tomography (CT), which did not show any swelling of the pancreas. Additionally, her antinuclear antibody titer was normal.

Under the clinical impression of acute kidney injury due to dehydration and pneumonia, the patient underwent treatment by appropriate hydration and antibiotics, such as ceftriaxone. We considered the cause of dehydration to be acute pancreatitis. However, her renal function did not improve and her urine output decreased from 1,200 to 200 mL/day on the fourth day of admission. As a result, hemodialysis was initiated. We performed further laboratory testing including complement levels, autoantibodies, and ANCA studies. The

Received: November 20, 2014
Revised : December 19, 2014
Accepted: February 17, 2015

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pISSN 1226-3303
eISSN 2005-6648
http://www.kjim.org

complement C3 and C4 levels were 0.78 g/L (normal, 0.76 to 1.39) and 0.14 g/L (normal, 0.12 to 0.37), respectively. Rheumatoid factor was elevated to 53.3 kIU/L (reference, 0 to 15). ANCA was positive in a perinuclear pattern with a titer of 1:640. In the enzyme immunoassay, anti-myeloperoxidase antibody was positive, but anti-proteinase 3 antibody was negative. Anti-glomerular basement membrane antibody was also negative.

Following the clinical diagnosis of MPA, the patient was started on 1 g/day of intravenous methylprednisolone (21st day of hospitalization) for 3 days, followed by 60 mg/day of oral prednisone. Intravenous cyclophosphamide (750 mg) was administered on the 27th day of admission. Following immunosuppressive therapy, the patient's fever subsided and her serum and lipase levels returned to normal (Fig. 1). On the 30th day of admission, a percutaneous renal biopsy was performed. On light microscopy, all six glomeruli showed segmental or global sclerosis with crescents. Both cellular (2/6, 33%) and fibrous crescents (4/6, 66%) were present. Small amounts of mesangial immunoglobulin M and C3 deposits were detected by immunofluorescence microscopy (Fig. 2). Plasmapheresis was initiated on day 40, at which time the patient had been maintained on hemodialysis three to four times per week since day 4 of hospitalization. During dialysis on day 50, she complained of cough and dyspnea. A chest CT scan showed multifocal ground-glass opacities in the bilateral lungs. Laboratory examination revealed neutropenia (absolute neutrophil count of 0.1 × 10^9; reference, > 1.5 × 10^9) and elevated C-reactive protein (120 mg/L). The patient was diagnosed with pneumonia and treated with intravenous antibiotics, including teicoplanin and meropenem. Despite these interventions, the patient died of septic shock on hospital day 60.

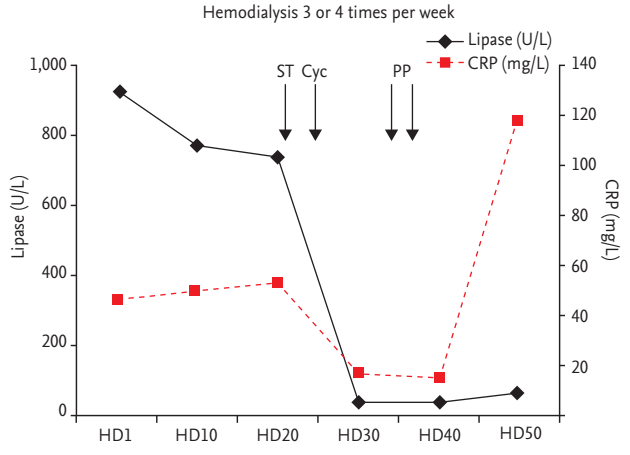

Figure 1. Following immunosuppressive therapy, the serum amylase levels and C-reactive protein (CRP) concentration returned to normal. ST, steroid; Cyc, cyclophosphamide; PP, plasmapheresis; HD, hemodialysis.

Although digestive tract involvement has been reported in 30% to 56% of patients with MPA, pancreatic involvement in MPA is extremely rare [1]. In several cases of Wegener's granulomatosis, which is another form of ANCA-associated vasculitis, acute pancreatitis was the initial manifestation [3]. However, few cases of acute pancreati-

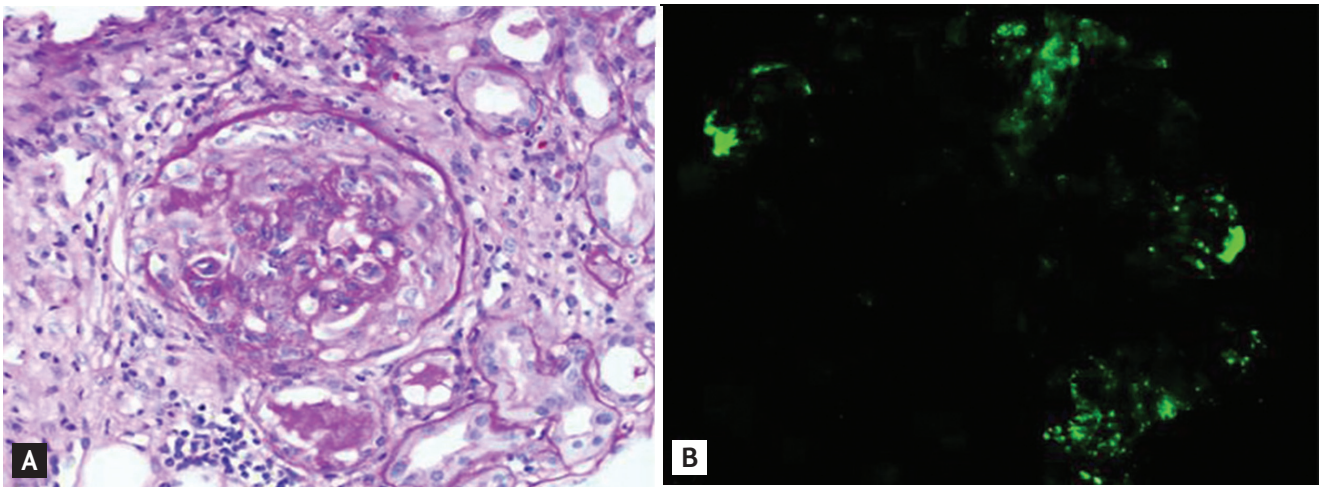

Figure 2. (A) Kidney biopsy (light microscopy). The glomerulus shows global sclerosis with fibrocellular crescent formation. The interstitium shows plasma cell and lymphocyte infiltration with mild fibrosis (PAS, ×200). (B) Small amounts of mesangial immunoglobulin M deposits were detected by immunofluorescence microscopy.

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tis in patients with MPA have been reported. Iwasa and Katoh [2] and Haraguchi et al. [4] reported cases of MPA identified on autopsy as crescentic glomerulonephritis and necrotizing pancreatitis, respectively. In our case, the patient presented with acute pancreatitis on admission, which improved after immunosuppressive treatment. To our knowledge, this is the first case report of acute pancreatitis as an initial manifestation of MPA in Korea.

There is no literature to date regarding the clinical significance of MPA presenting as acute pancreatitis. We hypothesize that there may be two clinical implications in treating these patients. First, we initially thought that the cause of the acute kidney injury in our patient was dehydration due to pancreatitis and treated her condition with intravenous fluid resuscitation and antibiotics. However, her renal function did not improve, and the patient was later found to have MPA. Therefore, in cases of acute kidney injury and concomitant pancreatitis, it is important to consider the possibility of ANCA-associated vasculitis. Second, we propose that MPA presenting with pancreatitis might be a more severe form of MPA. Chawla et al. [3] reported that all patients who presented initially with pancreatitis had a rapidly progressive course with fulminant progression of Wegener's granulomatosis. Among patients with MPA, two patients with pancreatic involvement reportedly died despite clinical remission [2,4]. Therefore, more careful monitoring may be needed in patients with MPA and acute pancreatitis.

Immunosuppressive treatment with corticosteroids, azathioprine, and cyclophosphamide causes cellular immune dysfunction, which facilitates infection by intracellular pathogens such as fungi, viruses, and mycobacteria. Booth et al. [5] reported that development of leukopenia and pneumonia were the two most common adverse events in patients with vasculitis on immunosuppressive therapy and were closely associated with sepsis and death. The patient described in the present case report died of sepsis secondary to pneumonia.

In summary, we have reported a case of MPA with crescentic glomerulonephritis presenting initially as acute pancreatitis. In cases of acute kidney injury and concomitant acute pancreatitis, it is important to evaluate the presence of ANCA-associated vasculitis.

Keywords: Microscopic polyangiitis; Pancreatitis; Antibodies, antineutrophil cytoplasmic

Conflict of interest

No potential conflict of interest relevant to this article was reported.

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