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Fatal Pancreatic Panniculitis Associated with Acute Pancreatitis: A Case Report

Pancreatic panniculitis is a rare disease in which necrosis of fat in the panniculus and other distant foci occurs in the setting of pancreatic diseases; these diseases include acute and chronic pancreatitis, pancreatic carcinoma, pseudocyst, and other pancreatic diseases. This malady is manifested as tender erythematous nodules on the legs, buttock, or trunk. Histopathologically, it shows the pathognomonic findings of focal subcutaneous fat necrosis and ghost-like anucleated cells with a thick shadowy wall. We herein report a case of fatal pancreatic panniculitis that was associated with acute pancreatitis in a 50-yr-old man. He presented with a 3-week history of multiple tender skin nodules, abdominal pain and distension. Laboratory and radiologic findings revealed acute pancreatitis, and skin biopsy showed pancreatic panniculitis. Despite intensive medical care, he died of multi-organ failure 3 weeks after presentation.

Key Words : *Pancreatitis; Fat Necrosis; Panniculitis*

Woo Sun Lee, Mi Yeon Kim, Sang Woo Kim*, Chang Nyol Paik*, Hyung Ok Kim, Young Min Park

Departments of Dermatology and Internal Medicine*, College of Medicine, The Catholic University of Korea, Seoul, Korea

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Address for correspondence
Young Min Park, M.D.
Department of Dermatology, The Catholic University of Korea, Kangnam St. Mary's Hospital, 505 Banpo-dong, Seocho-gu, Seoul 137-701, Korea
Tel : +82.2-590-1351, Fax : +82.2-599-9950
E-mail : yymmpark@hotmail.com

INTRODUCTION

The association of pancreatic disease with fat necrosis at distant foci was first described by Chiari in 1883 (1). The most common pancreatic disorders associated with pancreatic panniculitis are acute or chronic pancreatitis, especially the alcohol-related types, and pancreatic carcinoma. Other pancreatic disorders have been infrequently reported to be associated with pancreatic panniculitis, and these include post-traumatic pancreatitis, pancreatic pseudocyst, pancreas divisum, and hemophagocytic syndrome (2). To the best of our knowledge, only three cases of pancreatic panniculitis have been reported in the Korean literature. One case was associated with pancreatic adenocarcinoma, and the other two were associated with acute and chronic pancreatitis, respectively (1, 3, 4).

We report here on a case of pancreatic panniculitis associated with acute pancreatitis that had a fatal outcome. Physicians should be aware of this disease entity because this rare cutaneous manifestation may be associated with major morbidity and significant mortality.

CASE REPORT

A 50-yr-old man with a history of alcohol abuse presented with increasing fatigue, generalized weakness, decreased appetite, and abdominal distension and discomfort for the past 2 weeks. He was admitted to the Department of Internal Medicine under the impression of acute pancreatitis, and he was referred to the Department of Dermatology for the multiple painful subcutaneous nodules on his legs, which had suddenly developed 3 weeks before (Fig. 1).

On admission, his hemoglobin value was 11.4 g/dL (reference range: 13-18 g/dL), the total count of white blood cells was 31,300/μL (reference range: 4,000-10,000/μL) with 90.7% segment neutrophils, but the coagulation profiles and platelet counts were normal. The serum amylase was 1,909 U/L (reference range: 20-120 U/L), and the lipase was 2,306 U/L (reference range: 5-51 U/L). Liver function testing revealed an aspartate aminotrans terase level of 104 U/L (reference range: 13-40 U/L), an alanine aminotransferase level of 24 U/L (reference range: 7-40 U/L), and a lactate dehydrogenase level of 665 U/L (reference range: 200-400 U/L). The fasting glucose level was 133.9 mg/dL (reference range of 70-110 mg/dL) and the electrolytes were unbalanced. The calcium level was 7 mg/dL (reference range: 8.6-10 mg/dL), and the sodium level was 125 mEq/L (reference range: 136-145 mEq/L). The blood urea nitrogen and creatinine were 40.1 mg/dL and 2.1 mg/dL, respectively. After 48 hr, the blood urea nitrogen was increased to 62.7 mg/dL after intravenous fluid administration. As his leukocytosis, elevated serum LDH at admission, and hypocalcemia, hypoalbuminemia, increase in blood urea nitrogen during initial 48 hr were poor prognostic factors in Ranson criteria, increased risk of complications was predicted. The chest radiograpy showed mild pleural effusion. On the abdomi-

nal computed tomography scan and magnetic resonance (MR) imaging taken on the second day of admission, a swollen pancreas with an dilated pancreatic duct, a loculated fluid collection in the left anterior perirenal space, multiple hepatic cysts, and massive ascites were noted (Fig. 2). On abdominal paracentesis, the amylase level was 14,696 U/L, the serum-ascites albumin gradient was calculated to be 1.07, and there was no evidence of malignancy.

A skin biopsy performed on the 4th day of admission from the nodule on the left lower leg showed a diffuse subcutaneous fat necrosis and ghost-like cells with thick shadowy walls and no nuclei. There was a fine granular basophilic material deposited within and around the necrotic fat cells (Fig. 3). These findings were consistent with pancreatic panniculitis. After 10 days of intensive medical care for the pancreatic disease, the patient's condition began to worsen; he and his family began to refuse any further treatment. Despite a strong warning by physicians, he insisted on the discharge and died at home 1 week later.

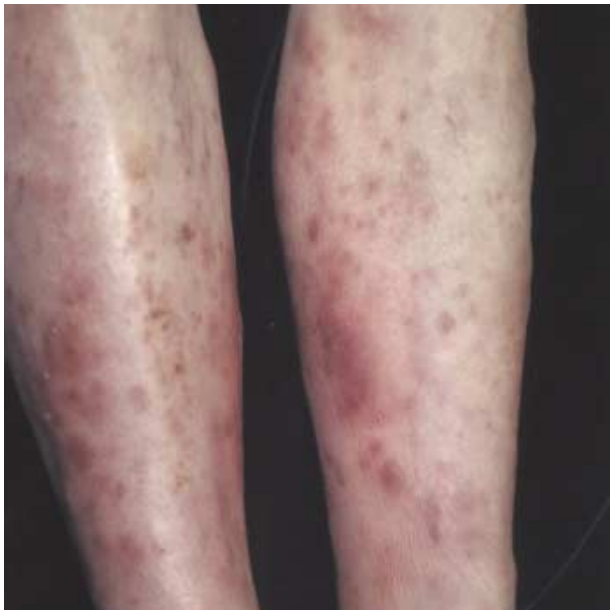

Fig. 1. Multiple erythematous to brownish nodules are shown on both lower legs.

DISCUSSION

The pathogenesis of pancreatic panniculitis is still unknown, but the released pancreatic enzymes such as trypsin may increase the permeability of the microcirculation. Lipase or amylase is then involved in the process of fat degradation, which results in the liberation of free fatty acids that combine with calcium to form soap (2). Although elevation of the pancreatic enzymes is common in pancreatitis patients, pancreatic panniculitis is a very rare malady. Mullin et al. (5) identified only one case in a retrospective review of 893 patients who had suffered with pancreatic disease from various causes. Furthermore, well documented cases of fat necrosis with normal serum lipase levels have also been described (6). These reports, suggest that there would be some other factors that allow the pancreatic enzymes to escape from the circulation and act on the subcutaneous fat. Zellman (7) suggested that some damage to the blood vessels via inflammation, edema, or altered immunity may act as the initiating factor.

As for the two cases in the Korean literature, one case was

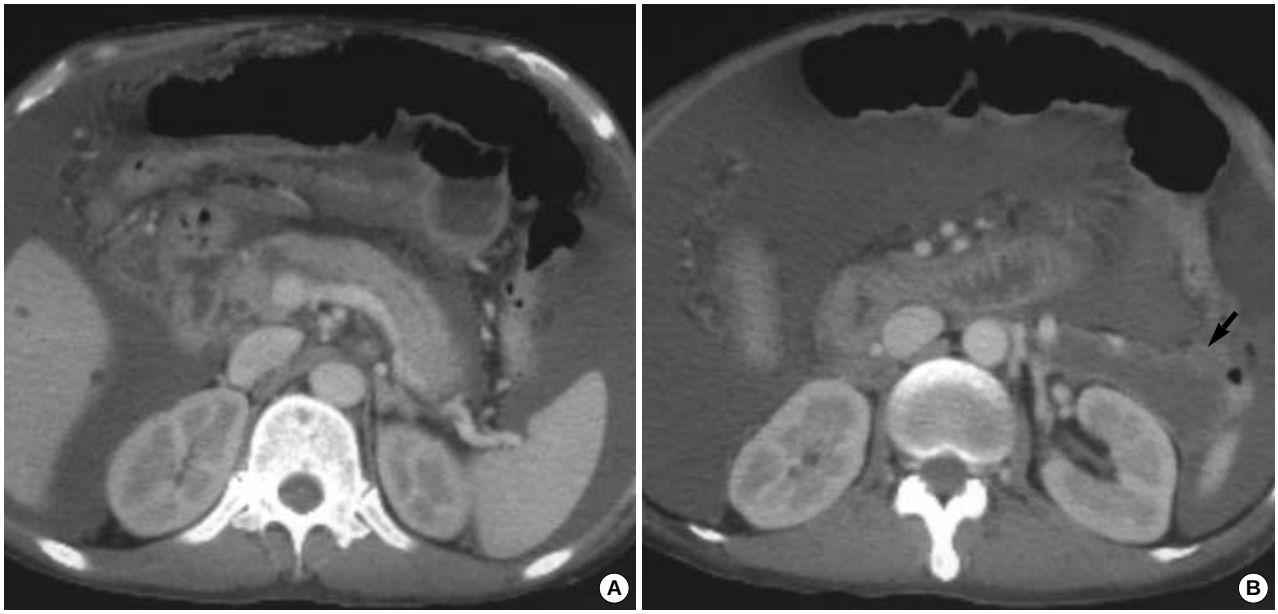

Fig. 2. (A) Contrast-enhanced computed tomography showing an edematous pancreas with dilated pancreatic duct. (B) Loculated fluid at left anterior perirenal space with massive ascites was noted (arrow).

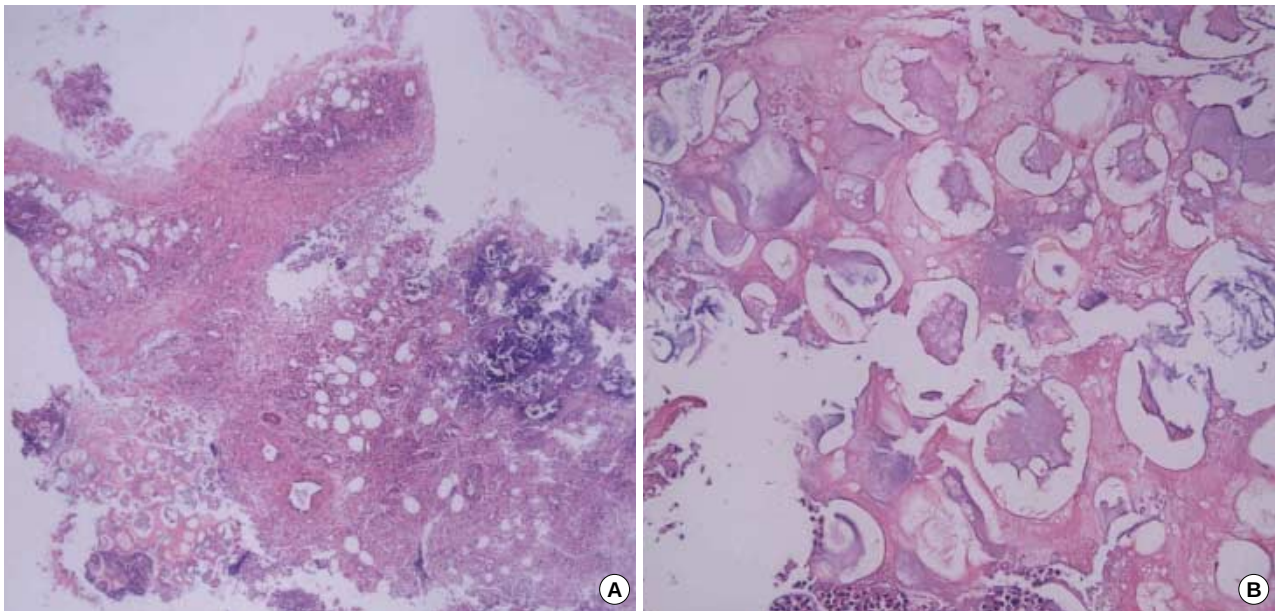

Fig. 3. (A) Diffuse fat necrosis and fine granular basophilic material deposited in the subcutis. (B) Ghost-like fat cells with thick shadowy walls and no nuclei are noted in the necrotic area (Hematoxylin-eosin stain, A: ×40, B: ×200).

associated with chronic pancreatisis, in which the cutaneous lesions had occurred 3 months later than the other systemic symptoms, and they involuted as the underlying pancreatitis was ameliorated (4). The other case was associated with acute pancreatitis with pancreas divisum, in which his skin lesions had appeared 2-3 days after his admission due to acute pancreatitis; the skin lesions also resolved as the underlying pancratitis subsided with conservative treatment (1). On the contrary, in our patient, the skin lesions preceded the other systemic symptoms.

Although the underlying pancreatic pathologic conditions can vary, the clinical features of pancreatic panniculitis are similar. The legs were the most commonly affected area, but the lesions can also occur on the arms, thighs, and trunk. The lesions usually began as erythematous or red-brown subcutaneous nodules with a tendency to show central softening. In the mild form, they may involute within weeks and leave an atrophic hyperpigmented scar. If the fat necrosis is severe, individual nodules may break down and extrude necrotic material (8). Although patients with other panniculitides such as erythema nodosum, erythema induratum, lupus panniculitis, Weber-Christian panniculitis, or alpha-1 antitrypsin deficiency-associated panniculitis can have similar clinical lesions, the diagnosis of pancreatic panniculitis is suggested by the presence of pancreatic disease and this is confirmed relatively clearly by the characteristic histopathologic findings. The pathognomonic findings are collections of 'ghost cells' and anucleated adipocytes containing intracytoplasmic fine basophilic granular material from the saponification of fat. The resistance of the fat cell membrane to lipase produces the shadowy walls and the fatty acids combine with calcium to form calcium soap (10).

Medical and surgical treatments of the underlying pancreatic disease are the primary therapeutic approaches. Sometimes conservative care can ameliorate the pancreatitis, and this then results in the resolution of the skin lesions. In isolated cases, surgical correction of anatomic ductal anomaly or pancreatic pseudocyst, or the removal of gallstones has resulted in complete resolution (8). However, disseminated fat necrosis is associated with major morbidity and mortality. In a review of 27 patients with pancreatic panniculitis, all 8 patients with pancreatic carcinoma and 42% of the 19 patients with pancreatitis died of their disease, as was seen in our case (9).

Pancreatic panniculitis is a pathognomic finding of pancreatic disease, and as in our case, the cutaneous lesions may precede the usual manifestations of underlying pancreatic disease by several weeks to months (11). Therefore, clinicians should be aware that panniculitis may herald serious pancreatic disease.

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