

Pancreatic panniculitis – a cutaneous manifestation of acute pancreatitis

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Abstract

Background: Pancreatic panniculitis is a rare complication of pancreatic disease occurring in 2% to 3% of all patients, most commonly those with acute or chronic pancreatitis.

Main observations: We report the case of a pancreatic panniculitis associated with acute pancreatitis in a 63-year-old man. He presented with a 2-day history of multiple tender subcutaneous nodules, followed by nausea, vomiting, severe epigastric pain and loss of appetite, hours before admission. Laboratory and radiologic findings revealed acute pancreatitis. Histopathological examination from a skin biopsy specimen taken from a nodule showed a mostly lobular panniculitis with "ghost cells", without vasculitis. Nodules disappeared with the resolution of acute pancreatic inflammation, as amylase and lipase levels returned to normal.

Conclusions: Panniculitis may be the first manifestation of pancreatic disease. Therefore clinicians must have a high index of suspicion for the diagnosis of pancreatic panniculitis. (*J Dermatol Case Rep.* 2014; 8(1): 35-37)

Introduction

Pancreatic panniculitis is a rare complication of pancreatic disease appearing in approximately 2% to 3% of all patients, most commonly those with acute or chronic pancreatitis, but also in patients with carcinoma of the pancreas, more frequently with acinar cell carcinoma type.¹ Its pathogenesis is still not well understood but the release of pancreatic enzymes in the setting of pancreatic injury may play an important role, leading to fat necrosis in subcutaneous tissue and elsewhere.² Pancreatic panniculitis typically presents with tender, edematous and erythematous to red-brown subcutaneous nodules that spontaneously ulcerate and exude an oily brown substance that results from liquefaction necrosis of adipocytes. The lesions most commonly develop on the lower legs, though other sites like thighs, buttocks, arms, abdomen, chest and scalp have been reported.³ The onset of pancreatic panniculitis is often accompanied by acute arthritis and may precede other signs of pancreatic disease by days to months in 40% of cases.⁴

Case Report

A 63-year-old Caucasian male attended the emergency department complaining of fever (39°C), severe epigastric pain, loss of appetite, nausea, and vomiting, with a sudden onset few hours earlier. On physical examination, the patient was found to have multiple, ill-defined, tender, warm and erythematous subcutaneous nodules, 1-2 cm in diameter, on the legs, thighs and arms. Although without ulceration, a spontaneous brown oily drainage was seen in some of them (Fig. 1). The patient reported its onset two days before admission, accompanied by ankle and knee arthralgia without swelling.

Blood examination showed elevated serum amylase (6647 UI/L) and lipase (3000 UI/L) levels; hemoglobin level of 12,4 g/dL with a mean corpuscular volume of 100 fL; white blood cell count of $2,2 \times 10^9$ /L without eosinophilia. The remaining parameters were within the normal range. Chest and abdominal computed tomography showed a swollen pancreas with densification in peripancreatic fat, dilatation

of the distal end of the common bile duct, minimal pelvis ascites without pleural effusion, and normal liver structure. The diagnosis of acute pancreatitis was made. At admission the patient had a bedside index of severity in acute pancreatitis (BISAP) score of 1, and did not fulfil severity criteria according to Ranson's score.

Endoscopic retrograde cholangiopancreatography (ERCP) showed a minimal dilatation of the common bile duct; no gallstones were found. The patient had no history of alcohol abuse, hyperlipidemia nor drug intake besides mesalazine for quiescent Crohn's disease.

An incisional biopsy from a nodule was performed, and

histopathological examination revealed a mostly lobular panniculitis without vasculitis, with focal necrosis of adipocytes due to saponification. A fine basophilic material within these anucleate cells ("ghost adipocytes") and an infiltrate of neutrophils were seen (Fig. 2). Therefore pancreatic panniculitis associated with acute idiopathic pancreatitis was diagnosed.

The patient received standard medical treatment with intravenous administration of fluids and analgesics. The nodules resolved spontaneously after 10 days as his amylase and lipase levels returned to normal. After one year of follow-up only hyperpigmented scars were seen, without relapses of panniculitis or pancreatic disease.

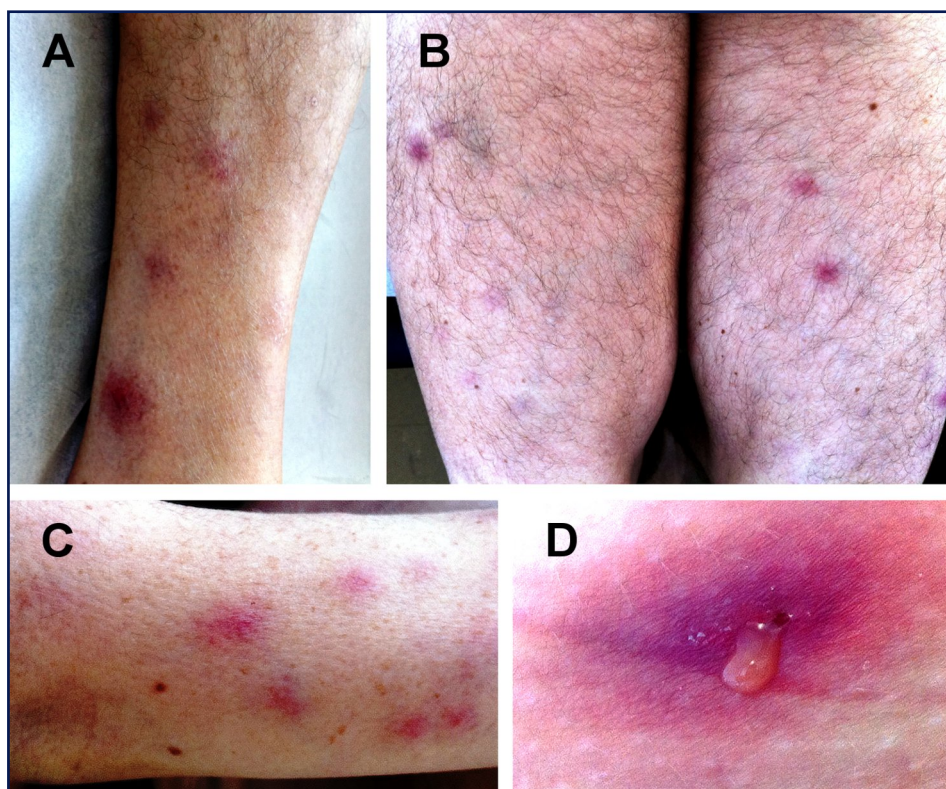


Figure 1

Multiple, ill-defined, erythematous subcutaneous nodules on the legs (A), thighs (B) and arms (C); spontaneous brown oily drainage was seen in some nodules (D).

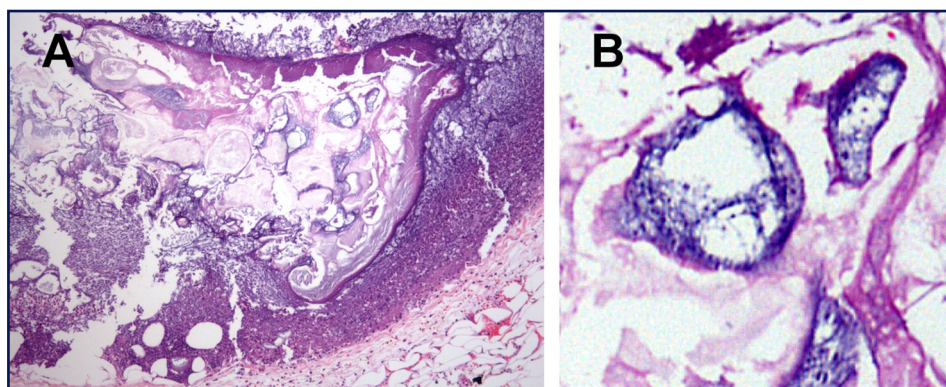


Figure 2

Histopathological examination of a nodule:

(A) mostly lobular panniculitis without vasculitis, with focal necrosis of adipocytes surrounded by neutrophils (Hematoxylin-eosin, original magnification x10);

(B) "ghost cells" consisting of anucleate necrotic adipocytes with a basophilic granular material within their cytoplasm (Hematoxylin-eosin, original magnification x100).

Discussion

The pathogenesis of pancreatic panniculitis is still unknown, but the release of pancreatic enzymes, such as amylase, lipase, phosphorilase and trypsin, may be involved.¹ The latter increase the permeability of the microcirculation within lymphatic vessels, allowing other enzymes to enter into fat lobules. Lipase or amylase hydrolize neutral fat resulting in glycerol and free fatty acids accumulation leading to fat necrosis and inflammation. The pathogenic role of pancreatic lipase is supported by the finding of that enzyme in the areas of subcutaneous necrosis, and also anti-lipase monoclonal antibodies within the necrotic tissue. There are probably other unknown factors required for the development of pancreatic panniculitis, because pancreatic disease is much more common than pancreatic panniculitis. Furthermore, in vitro studies did not demonstrate pancreatic panniculitis when normal human subcutaneous fat was incubated with human serum with high levels of pancreatic lipase and amylase, and some cases have been described with normal levels of pancreatic enzymes.⁵

Although the underlying pancreatic diseases may vary, the clinical features of pancreatic panniculitis are similar. They can also mimic other forms of panniculitis, such as erythema nodosum, erythema induratum, lupus panniculitis, traumatic, infectious, or α 1-antitrypsin deficiency panniculitis.⁶

The diagnosis of pancreatic panniculitis is suggested by the presence of pancreatic disease and typical histopathological findings. The main histopathologic feature is a mostly lobular panniculitis without vasculitis. But, in the very early stage, a septal pattern has been described, which results from enzymatic damage of the endothelial septa, allowing pancreatic enzymes to cross from blood to fat lobules resulting in coagulative necrosis of the adipocytes, which leads to pathognomonic "ghost cells". "Ghost adipocytes" are anucleate necrotic cells that have a thick wall with a fine basophilic granular material within their cytoplasm from dystrophic calcification. This is a result of saponification of fat secondary to the action of pancreatic enzymes in subcutaneous fat followed by calcium deposition. In early stages, a neutrophilic infiltrate may be found, but in the later stage, the inflammatory infiltrate is more granulomatous, "ghost adipocytes" and fat necrosis decreases, and fibrosis or lipatrophy are seen.^{2,5}

Treatment of pancreatic panniculitis is primarily supportive and should be directed to the underlying pancreatic disorder.^{2,7}

Our patient presented with the typical features of pancreatic panniculitis, with tender, erythematous subcutaneous nodules in common locations, days before the remaining and much more frequent manifestations of acute pancreatitis. The liquefactive necrosis of adipocytes resulted in spontaneous discharge of oily brown material and the nodules disappeared when the acute inflammatory phase was over. These findings may support the role of pancreatic enzymes in the pathogenesis of pancreatic panniculitis.

Conclusion

Although pancreatic panniculitis is rare, it is important to consider in the differential diagnosis of patients presenting with panniculitis.

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