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Case Report

Panniculitis Associated with Acute Pancreatitis

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Abstract

Pancreatic panniculitis is a rare pathology, corresponding to a cutaneous condition which can be associated with acute or chronic pancreatitis. Its pathophysiology is not yet fully understood, but the release of pancreatic enzymes into the circulation may be responsible for this condition. Typical histological features include adipocyte necrosis with an inflammatory infiltrate. Treatment, clinical progression, and prognosis are generally linked to pancreatic disease.

We present the case of a 62-year-old female, hospitalized for acute pancreatitis and presenting an erythematous plaque suggestive of bilateral fistulized dermohypodermatitis extending to the lower limbs. A Skin biopsy of lesions on the lower limbs revealed subcutaneous lobular panniculitis.

Keywords: *Pancreatic Panniculitis; Adipocyte Necrosis; Dermohypodermatitis; Lobular Panniculitis*

Introduction

Pancreatic panniculitis is a rare cutaneous condition which can appear in 2 to 3% of pancreatic disorders, most often in acute or chronic pancreatitis. The pathophysiology of this disorder is not yet fully understood, but the elevation and release of pancreatic enzymes into the circulation may be responsible. The histology of the lesions include adipocyte necrosis with an inflammatory infiltrate [1]. Treatment, evolution, and prognosis are generally linked to pancreatic disease. We report a case of panniculitis affecting both lower limbs associated with acute pancreatitis.

Case Presentation

We present the case of a 62-year-old female, with a past history of hypertension, hypertensive heart disease, and Hashimoto's disease under levothyroxine treatment, who consulted the emergency department for severe, transfixing epigastric pain, persisting for three days before admission. On clinical examination, the patient was apyretic, hemodynamically stable, and morbidly obese with a BMI of 63.8 kg/m^2. Abdominal examination revealed distension (attributed to obesity) and tenderness in the epigastric region. Examination of the lower limbs revealed an erythematous plaque suggestive of bilateral fistulized dermohypodermatitis extending to the lower third of the leg. The lesion was painful, warm to touch, and displayed serohematic fluid (Figure 1).

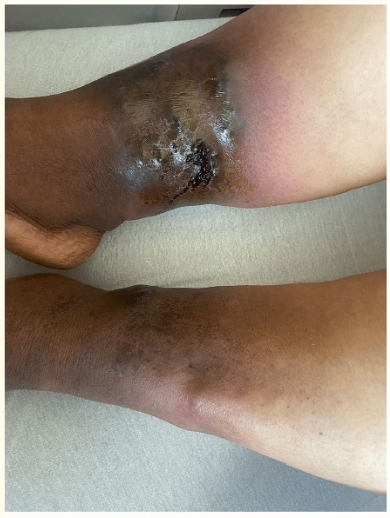

Figure 1

The diagnosis of acute pancreatitis was made based on a lipase level higher than 3 times the normal range (12,997 UI/l). Liver function tests revealed cytolysis, with AST at 175 UI/l (5 times the normal range) and ALT at 224 UI/l (8 times the normal range). Total bilirubinemia was elevated at 30 mg/l (2.5 times the normal range), GGT at 299 UI (5 times the normal range), and normal alkaline phosphatases at 116 UI/l. Additionally, there was leukocytosis at 12,890 elements/mm^3 and a CRP level of 200 mg/L. An abdominal CT scan performed 72 hours after the onset of pain showed acute pancreatitis with a score of 4 on the CT Severity Index (CTSI), with multiple areas of necrosis and densification of the perirenal fat. A biliary MRI revealed a microlithiasic gallbladder without dilation or stones in the common bile duct.

Pancreatitis was classified as moderate according to the Atlanta classification.

Skin biopsy of lesions on the lower limbs, conducted with a scalpel, revealed subcutaneous lobular panniculitis composed of lymphohistiocytic elements along with areas of neutrophils. Similar inflammatory elements were observed in the deep dermis with coagulation necrosis of adipocytes.

Adipocyte phantoms were replaced by a blue-gray granular substance (saponification) surrounded by neutrophils.

The patient's condition improved after digestive rest, hydration, analgesics, antibiotic therapy, and local care for both legs. This led to the normalization of liver and infectious markers, allowing for the patient's discharge with the scheduling of cholecystectomy after 4 weeks.

Discussion

Etiology

As the incidence of acute pancreatitis rises globally, the probability of encountering pancreatic panniculitis in more cases increases. However, establishing a definitive correlation is challenging due to a lack of specific data on pancreatic panniculitis in studies focused on

acute pancreatitis. While systematic retrospective reviews of case studies reporting pancreatic panniculitis have been done, it is difficult to determine its presentation's, exact incidence and prevalence, mainly when various etiologies exist for this panniculitis [2].

The most frequent etiologies of pancreatic panniculitis are acute pancreatitis, chronic pancreatitis and pancreatic carcinoma [3] more frequently acinar cell carcinoma. 16% of patients with acinar cell carcinoma have symptoms of pancreatic panniculitis [2]. Pancreatic panniculitis could be the first manifestation of other pancreatic malignancies, including ductal adenocarcinoma, intraductal mucinous cancer, and neuroendocrine tumors [2].

In some cases, panniculitis can be associated with other pancreatic disorders, such as pancreatic pseudocysts, pancreas divisum and vascular pancreatic fistulas. It has also been described in patients with human immunodeficiency virus (HIV) [3].

Pathophysiology

The exact pathophysiology explaining the skin manifestations of pancreatic panniculitis is not completely understood but is thought to be related to the release of pancreatic enzymes. Trypsin can increase microcirculatory and lymphatic channel permeability allowing lipase and amylase to enter the peripheral circulation. Elevated amounts of lipase and amylase can cause fat necrosis and lipolysis, with a concurrent inflammatory response [2,4,5].

Similarly, this lipolysis may occur within the synovium causing articular pains in pancreatitis panniculitis and polyarthritis syndrome, with articular aspiration demonstrating a highly viscous fluid with elevated lipid content [6].

Elevated enzyme levels have been detected in the blood, urine, and skin lesions, even if there is not a detectable pancreatic disease [7]. The finding of pancreatic lipase in the areas of subcutaneous necrosis can explain the pathogenic role of pancreatic lipase [8].

The role of specific cytokines, such as adipokines, immune complexes, and vascular damage that allows for immune complex deposition are also proposed mechanisms for this disease's pathophysiology [6].

Histopathology

Histologically, the skin biopsies of pancreatic panniculitis have distinct features. There are descriptions of 2 types of pancreatic panniculitis histologically, lobular panniculitis, which was the case for our patient, and septal panniculitis [5].

Septal panniculitis can be observed in the early stages due to pancreatic enzymatic transition from blood to fat lobules, disrupting the endothelial septa with a concurrent demonstration of adipocyte necrosis [9].

Lobular fat necrosis is predominant with adjacent neutrophilic infiltration [5]. There is often focal calcification and adipocytes without nuclei, often referred to as "ghost cells" or "ghost adipocytes," which are characteristic of this condition [9,10].

Clinical features

Pancreatic panniculitis presents undefined nodules. These nodules are usually sensitive, oedematous, erythematous and can spontaneously ulcerate and drain an oily brown substance, sterile, and viscous which is the liquefaction necrosis of adipocytes. These lesions are usually seen on the distal parts of the legs around the ankles and knees (Figure 1). Nodules can spread over the thighs, buttocks, arms, abdomen, chest, and scalp. A single cutaneous nodule have been reported in some cases of pancreatic panniculitis [11].

Panniculitis associated with pancreatic cancer is more likely to ulcerate, persist and recur in comparison to lesions associated with inflammatory pancreatic disease. Cutaneous lesions associated with pancreatic cancer have also been reported to occur in areas other than the lower limbs including the thighs, abdomen, buttocks, arms, scalp and chest [3].

Differential diagnosis

There is other forms of panniculitis that can clinically present similarities with the nodules of pancreatic panniculitis, such as erythema nodosum, erythema induratum, a1- antitrypsin deficiency panniculitis, infectious panniculitis, or subcutaneous metastasis [12].

Erythema induratum is a type of panniculitis typically seen in middle-aged women. Erythema induratum presents as tender nodules that develop on the lower legs and may ulcerate. An immune reaction to bacteria, such as *Mycobacterium tuberculosis* or other *Mycobacteria*, causes the condition [13].

Panniculitis caused by alpha-1-antitrypsin deficiency is a rare genetic disorder in which there is a deficiency in the alpha-1-antitrypsin protein, leading to a buildup of abnormal protein in the liver and lungs. This can also cause panniculitis, which presents as painful nodules on the lower legs that may ulcerate [13].

Erythema nodosum is the most common form of panniculitis and may be similar to pancreatic panniculitis in appearance but will not be associated with pancreatitis and is rarely associated with pancreatic malignancy. Erythema nodosum will not ulcerate nor secrete a viscous fluid [4].

Histologically, in all the differential diagnosis, ghost cell formation or saponification of the fat are not found [7].

Other conditions to keep on the differential list include migratory thrombophlebitis, cutaneous abscesses, lupus panniculitis Weber-Christian disease, or arthropod bites [10,14].

Treatment

The primary treatment of pancreatic panniculitis is to address the underlying cause. For example, as IV fluids and early enteral feeding in acute pancreatitis are associated with lower infection and mortality rates, this also aids in the resolution of the panniculitis within a few days [15].

In cases of chronic pancreatitis, cholecystectomy and gallstone pancreatic duct removal could resolve the panniculitis [16]. In the case of pancreatic fistula or cyst, a pancreatic duct stent can be used to relieve obstruction [17]. Biliary bypass surgery can be useful if simple measures, such as drainage, are unsuccessful [17] and complete resolution of symptoms occurs when the anatomic ductal anomaly is surgically corrected [16].

In cases where pancreatic neoplasms are associated with pancreatic panniculitis, the tumor is often advanced by the time the cutaneous lesions appear. Nevertheless, early treatment may be beneficial. In pancreatic acinar cell carcinoma treated with a chemotherapy regimen of folinic acid, fluorouracil, irinotecan, and oxaliplatin, pancreatic panniculitis was resolved after multiple cycles [18,19].

Immunosuppressive drugs, nonsteroidal anti-inflammatory drugs, and corticosteroids are often ineffective in treating cutaneous nodules and arthritis associated with pancreatic panniculitis [20].

Evolution

The evolution of pancreatic panniculitis depends on the underlying disease process. It has a high mortality rate unless the underlying pancreatic abnormality is reversed. The prognosis is particularly poor in cases of pancreatic panniculitis related to pancreatic malignancy [3].

Once the underlying condition is treated, cutaneous lesions will slowly resolve, leaving post-inflammatory changes.

Conclusion

In conclusion, pancreatic panniculitis remains a rare but significant manifestation of pancreatic disorders. Advances in understanding this association could contribute to early diagnosis of pancreatic disorders and guide clinical management.

Healthcare professionals must remain vigilant to cutaneous symptoms, particularly in patients with a history of pancreatic diseases, to enhance the quality of care and deepen our knowledge of this specific clinical entity. Further researches are imperative to refine our understanding of pancreatic panniculitis, thereby opening pathways for improved patient outcomes and therapeutic interventions.

Bibliography

1. Zélia Neves., *et al*. "Panniculitis - A rare manifestation of acute pancreatitis". *Portuguese Journal of Gastroenterology* 22.3 (2015): 117-120.
2. Zundler S., *et al*. "Pancreatic panniculitis in a patient with pancreatic-type acinar cell carcinoma of the liver - case report and review of literature". *BMC Cancer* 16 (2016): 130.
3. Lucy Webber. Clinical Fellow in Dermatology, Department of Dermatology, University Hospitals Bristol NHS Foundation Trust, UK. Panniculitis associated with pancreatic disease (2017).
4. Kunovsky L., *et al*. "Skin manifestations of pancreatic diseases". *Biomedical Papers of the Medical Faculty of the University Palacky, Olomouc, Czech Republic* 166.4 (2022): 353-358.
5. Selvaraj V and Dapaah-Afriyie K. "A tale of two Ps: Panniculitis secondary to acute pancreatitis". *Cureus* 13.12 (2021): e20504.
6. Ferri V., *et al*. "Pancreatic disease, panniculitis, polyarthrtitis syndrome successfully treated with total pancreatectomy: Case report and literature review". *International Journal of Surgery Case Reports* 28 (2016): 223-226.
7. Saoraya Lueangarun., *et al*. "Pancreatic panniculitis: a cutaneous presentation as an initial clue to the diagnosis of pancreatic cancer". *Journal of the Medical Association of Thailand* 94.1 (2011): 253-257.
8. Requena L and Yus ES. "Panniculitis. Part II. Mostly lobular panniculitis". *Journal of the American Academy of Dermatology* 45.3 (2001): 325-364.
9. Bruno CM., *et al*. "Necrotizing panniculitis as an uncommon manifestation of acute pancreatitis". *European Journal of Case Reports in Internal Medicine* 4.3 (2017): 000540.
10. Singh S., *et al*. "Pancreatic acinar cell carcinoma-induced panniculitis". *JAAD Case Reports* 4.7 (2018): 719-721.
11. Herrera Sanchez M., *et al*. "Single-nodule pancreatic panniculitis". *Dermatology* 193.3 (1996): 269.
12. Kaiser F Kabir and Saran Lotfollahzadeh. "Pancreatic Panniculitis". National Library of medicine (2023).
13. Franciosi AN., *et al*. "Alpha-1 antitrypsin deficiency-associated panniculitis". *Journal of the American Academy of Dermatology* 87.4 (2022): 825-832.
14. Makhoul E., *et al*. "Pancreatic panniculitis: A rare complication of pancreatitis secondary to ERCP". *Arab Journal of Gastroenterology* 15.1 (2014): 38-39.
15. Mederos MA., *et al*. "Acute pancreatitis: A review". *Journal of the American Medical Association* 325.4 (2021): 382-390.

16. Dahl PR., *et al*. "Pancreatic panniculitis". *Journal of the American Academy of Dermatology* 33.3 (1995): 413-417.

17. Lambiase P., *et al*. "Resolution of panniculitis after placement of pancreatic duct stent in chronic pancreatitis". *American Journal of Gastroenterology* 91.9 (1996): 1835-1837.

18. Lee CL., *et al*. "Germline BRCA2 variants in advanced pancreatic acinar cell carcinoma: A case report and review of literature". *World Journal of Gastroenterology* 28.45(2022): 6421-6432.

19. Yoshihiro T., *et al*. "Pancreatic acinar cell carcinoma presenting with panniculitis, successfully treated with FOLFIRINOX: A case report". *Molecular and Clinical Oncology* 6.6 (2017): 866-870.

20. Price-Forbes AN., *et al*. "Progression of imaging in pancreatitis panniculitis polyarthritis (PPP) syndrome". *Scandinavian Journal of Rheumatology* 35.1 (2006): 72-74.

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