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ULCERATIVE PANCREATIC PANNICULITIS COMPLICATED BY SECONDARY INFECTION AND DELAYED WOUND HEALING IN A PATIENT UNDERGOING HAEMODIALYSIS

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ABSTRACT

Introduction: Pancreatic panniculitis is a rare cutaneous manifestation of pancreatic disease.

Case description: A 75-year-old man on maintenance haemodialysis with a history of IgG4-related autoimmune pancreatitis presented with painful subcutaneous nodules on the lower extremities and a purulent leg ulcer. Elevated pancreatic enzyme levels and imaging findings suggested an exacerbation of chronic pancreatitis. Histopathological examination of a skin biopsy revealed lobular panniculitis with fat necrosis and ghost-like adipocytes, confirming the diagnosis of pancreatic panniculitis. Subcutaneous nodules regressed with conservative treatment for pancreatitis; however, the ulcer became secondarily infected and showed delayed wound healing.

Discussion: In patients undergoing haemodialysis, susceptibility to infection and impaired wound healing may complicate the course of ulcerative pancreatic panniculitis.

Conclusion: This case highlights the importance of early recognition of pancreatic panniculitis because secondary infection and delayed wound healing may complicate its clinical course in patients receiving maintenance haemodialysis.

KEYWORDS

Pancreatic panniculitis, fat necrosis, subcutaneous nodules, secondary infection

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LEARNING POINTS

- Pancreatic panniculitis should be considered in patients with painful subcutaneous nodules, even in the absence of abdominal symptoms.
- Histopathological examination is essential for the diagnosis of pancreatic panniculitis.
- Ulcerative pancreatic panniculitis may be complicated by secondary infection and delayed wound healing in patients undergoing maintenance haemodialysis.

INTRODUCTION

Pancreatic panniculitis is a rare complication that occurs in less than 3% of patients with pancreatic disease and is most commonly associated with acute or chronic pancreatitis and pancreatic neoplasms[1]. Although the pathogenesis has not been elucidated, the systemic release of pancreatic enzymes is believed to cause fat necrosis in the subcutaneous tissue, which typically presents as painful subcutaneous nodules on the lower extremities[2]. Owing to its rarity, early diagnosis of pancreatic panniculitis is often difficult, particularly in the absence of abdominal symptoms. Additionally, patients undergoing haemodialysis are at an increased risk of infection and impaired wound healing, which may complicate the clinical course of skin lesions[3].

We report a case of pancreatic panniculitis associated with exacerbation of chronic pancreatitis in a patient undergoing maintenance haemodialysis with a history of IgG4-related autoimmune pancreatitis, complicated by ulceration, secondary infection and delayed wound healing.

CASE DESCRIPTION

A 75-year-old man was admitted to our hospital for painful subcutaneous nodules on both lower legs and a purulent ulcer on the right leg. He had been diagnosed with IgG4-related autoimmune pancreatitis based on biopsy findings eight years earlier and had been monitored without treatment. He had been receiving maintenance haemodialysis for five years for end-stage renal disease of unknown aetiology. His regular medication was ferric citrate hydrate, and he occasionally consumed alcohol. Three weeks prior to admission, multiple painful nodules and oedema developed on both lower extremities. Subsequently, the number and size of the subcutaneous nodules progressively increased, and the pain worsened despite treatment with non-steroidal anti-inflammatory drugs (NSAIDs). Four days before admission, a skin ulcer appeared on the right lower leg, leading to difficulty in walking.

On physical examination his vital signs were stable, and his body mass index was 24.2 kg/m^2. Multiple tender subcutaneous nodules with mild erythema were observed on the extremities, predominantly on the lower limbs *(Fig. 1A)* and a purulent ulcer was observed on the right medial malleolus *(Fig. 1B)*. The patient had no abdominal pain or tenderness. Results of laboratory tests performed on admission *(Table 1)* revealed severe anaemia (haemoglobin level, 4.3 g/dl), elevated inflammatory markers (C-reactive protein, 6.7 mg/dl), markedly elevated pancreatic enzymes (pancreatic amylase, 2,128 U/l; lipase, 5,506 U/l) and increased IgG4 levels (1,171 mg/dl). Computed tomography (CT) revealed subcutaneous

Laboratory findings	
Complete blood count	
White blood cells (/µl)	17,400
Neutrophils (%)	90
Red blood cells (x10^4/µl)	140
Haemoglobin (g/dl)	4.3
Platelets (x10^4/µl)	37.5
Coagulation status	
Prothrombin time-international normalised ratio	1.3
Activated partial thromboplastin time (sec)	27.5
D-dimer (µg/ml)	9.8
Biochemistry	
Total protein (g/dl)	6.8
Albumin (g/dl)	2.8
Total bilirubin (mg/dl)	0.3
Aspartate aminotransferase (U/l)	17
Alanine aminotransferase (U/l)	9
Lactate dehydrogenase (U/l)	162
Alkaline phosphatase (U/l)	65
Gamma-glutamyl transferase (U/l)	17
Pancreatic amylase (U/l)	2,128
Lipase (U/l)	5,506
Creatine kinase (U/l)	129
Blood urea nitrogen (mg/dl)	129
Creatinine (mg/dl)	8.7
C-reactive protein (mg/dl)	6.7
Sodium (mEq/l)	132
Potassium (mEq/l)	5.3
Corrected calcium (mg/dl)	9.6
Glucose (mg/dl)	116
HbA1c (%)	4.8
IgG (mg/dl)	2,094
IgG4 (mg/dl)	1,171

Table 1. *Laboratory findings on admission.*

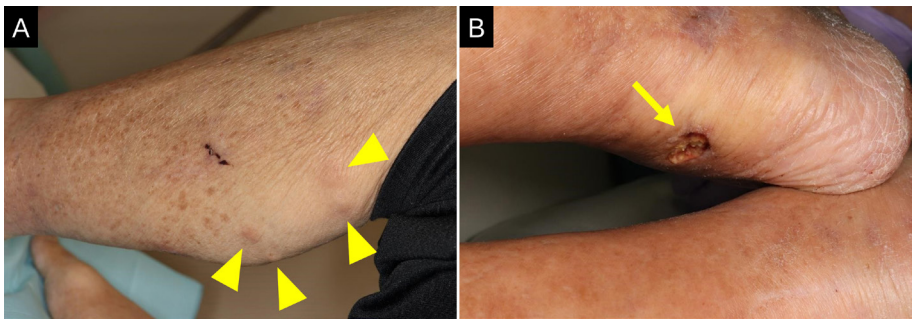


Figure 1. A) Cutaneous examination revealed multiple tender subcutaneous nodules on the lower limbs; B) a purulent ulcer on the right medial malleolus.

nodules in the lower limbs *(Fig. 2A)*. CT also revealed a stone at the pancreaticobiliary junction, dilation of the main pancreatic duct and increased fat density around the pancreatic head, consistent with pancreatitis *(Fig. 2B)*. An oesophagogastroduodenoscopy revealed gastric and duodenal ulcers suggestive of recent bleeding *(Fig. 3)*.

The patient's clinical course after admission is presented in *Figure 4*. Conservative management of pancreatitis with fasting and intravenous fluid administration was initiated. Red blood cell transfusion and proton pump inhibitors were administered to treat the anaemia and gastroduodenal ulcers, respectively. NSAIDs were discontinued and replaced with alternative analgesics, including opioids. On hospital day 2, a skin biopsy of the subcutaneous nodule was performed to evaluate the differential diagnosis of painful subcutaneous nodules. The differential diagnoses included erythema nodosum, vasculitis, infection, calciphylaxis, lymphoma and IgG4-related skin disease. Culture of the ulcer site and debridement were performed. On hospital day 5, the pancreatic enzyme levels decreased markedly. As the acute exacerbation of pancreatitis responded promptly to conservative management, neither corticosteroid therapy nor endoscopic intervention for the pancreatic stone was considered necessary. The subcutaneous nodules gradually regressed over the following days; initial wound cultures showed no bacterial growth. Histopathological examination of the subcutaneous nodule demonstrated infiltration of neutrophils and lymphocytes into the adipose tissue, indicating lobular panniculitis, as well as ghost-like adipocytes with loss of nuclei, consistent with fat necrosis *(Fig. 5)*. These findings confirmed the diagnosis of pancreatic panniculitis.

Serum IgG4 levels remained elevated but stable, and the favourable response to conservative treatment suggested an exacerbation of chronic pancreatitis with pancreatic stones rather than a flare-up of autoimmune pancreatitis. Additionally, the histopathological examination of gastric and duodenal biopsy specimens showed no significant infiltration of IgG4-positive plasma cells. Despite repeated debridement of the ulcers, the lesions progressed deeply, with tendon exposure and persistent purulent discharge. Owing to persistent purulent discharge, repeat wound cultures were obtained on hospital day 16, which identified Pseudomonas aeruginosa. Oral ciprofloxacin was started based on the initial antimicrobial susceptibility results; however, the ulcer failed to improve. Subsequent cultures revealed ciprofloxacin-resistant P. aeruginosa, and antibiotic therapy was switched to intravenous ceftazidime. Persistent severe pain at the infected ulcer sites led to insufficient fluid removal during haemodialysis, resulting in continued lower leg oedema. Although the subcutaneous nodules gradually resolved, the infected ulcers remained difficult to manage because of persistent infection and lower-extremity oedema. On hospital day 70, the patient was transferred to another hospital for ulcer management and rehabilitation. Five months later, the patient was discharged after remission of the skin ulcers.

DISCUSSION

In this case, pancreatic panniculitis developed during the exacerbation of chronic pancreatitis in a patient undergoing haemodialysis and progressed to ulcerative lesions with secondary infection. Histopathological examination revealed neutrophil-predominant lobular panniculitis with fat necrosis and ghost-like adipocytes, which are characteristic of pancreatic panniculitis[2]. Although the precise mechanism remains unclear, circulating pancreatic enzymes, particularly lipase, are believed to induce lipolysis and fat necrosis in the subcutaneous tissue.

Clinically, pancreatic panniculitis typically presents as

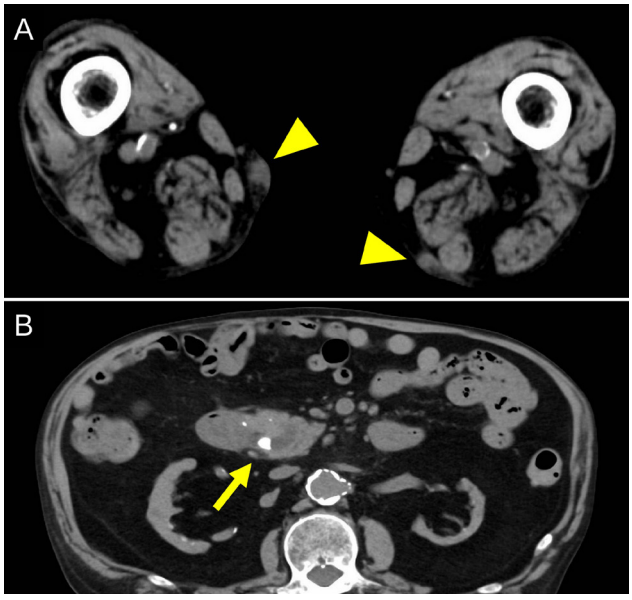


Figure 2. A) Computed tomography on admission showed multiple subcutaneous nodules in the lower limbs (arrowheads); B) a stone at the pancreaticobiliary junction with dilation of the main pancreatic duct, suggestive of pancreatitis (arrow).

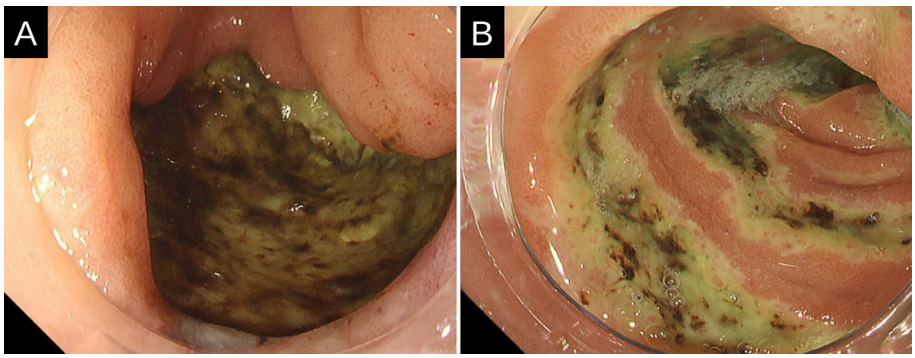


Figure 3. A) An oesophagogastroduodenoscopy revealed gastric; B) duodenal ulcers.

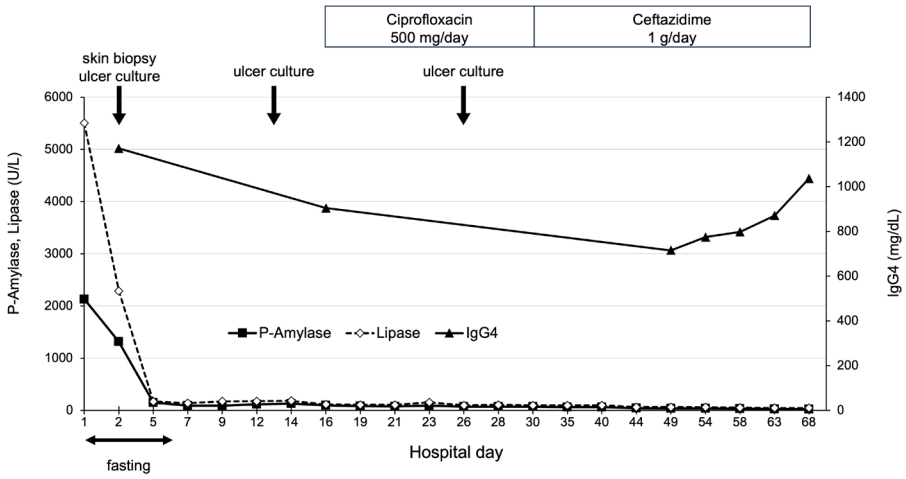


Figure 4. Showing the clinical course with laboratory data and treatments.

painful subcutaneous nodules on the lower extremities, which may ulcerate and discharge oily material. Recent reports suggest that ulceration occurs in approximately 18% of cases[4]. Notably, cutaneous manifestations may precede abdominal symptoms, and some patients present no abdominal complaints during the initial evaluation[5]. Therefore, cutaneous findings may provide important clues to an underlying pancreatic disorder and should prompt further evaluation, including measurement of pancreatic enzymes and appropriate imaging studies[6].

Erythema nodosum is a common cause of painful subcutaneous nodules with erythema on the lower extremities, and is associated with underlying conditions including infections, inflammatory diseases, malignancies and medications. Important differential diagnoses include erythema induratum of Bazin, superficial thrombophlebitis and other forms of panniculitis, including pancreatic panniculitis. Histopathological examination is essential for accurate diagnosis[7]. In patients receiving haemodialysis, calciphylaxis should also be considered because it commonly presents with painful subcutaneous nodules or plaques that may rapidly progress to necrotic ulcers, and is associated with high morbidity and mortality[8]. Additionally, cutaneous manifestations of IgG4-related disease have been reported in approximately 1.6%–4.2% of patients and most commonly affect the head and neck region, presenting as erythematous plaques or subcutaneous nodules[9]. In our patient, the histopathological examination revealed no significant infiltration of IgG4-positive plasma cells, making IgG4-related skin disease unlikely.

Primary management of pancreatic panniculitis involves treatment of the underlying pancreatic disorders. When pancreatitis is the cause, cutaneous lesions usually improve as pancreatic inflammation resolves. In contrast, cutaneous lesions tend to persist when associated with pancreatic neoplasms and their prognosis is generally poor[4]. Although maintenance haemodialysis itself has not been established as a risk factor for pancreatic panniculitis,

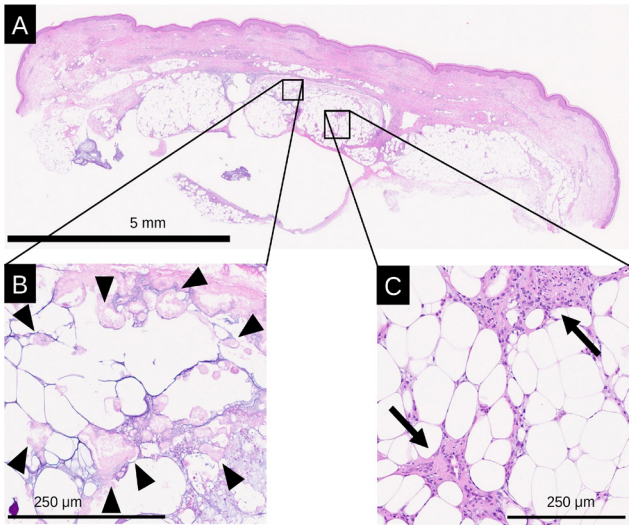


Figure 5. A) Haematoxylin and eosin staining of the skin lesion revealed zonal lesions within the subcutaneous connective tissue at low magnification; B) high-power examination revealed ghost-like adipocytes with loss of nuclei, consistent with fat necrosis (arrowheads); C) neutrophil and lymphocyte infiltration in the adipose tissue, indicating lobular panniculitis (arrows).

it may adversely affect the clinical course by increasing the risk of secondary infection and delayed wound healing once ulceration develops. In this case, although the subcutaneous nodules improved with conservative treatment for pancreatitis, the ulcer was complicated by a bacterial infection and showed delayed wound healing. Previous reports have described bacterial infections in ulcerated lesions, with healing achieved several weeks after debridement[10]. However, our patient required a substantially longer healing period. The prolonged course was likely related to maintenance haemodialysis because immune dysfunction and chronic inflammation increase susceptibility to infection and impair wound healing in patients with end-stage kidney disease[3]. Furthermore, lower-extremity oedema caused by inadequate fluid removal may have compromised local tissue perfusion and worsened the wound microenvironment.

CONCLUSION

In conclusion, early recognition of pancreatic panniculitis is important because cutaneous manifestations may provide the first clue to an underlying pancreatic disorder. Clinicians should be aware that ulcerative pancreatic panniculitis can be complicated by secondary infection and delayed wound healing, particularly in patients undergoing maintenance haemodialysis.

REFERENCES

1. Dahl PR, Su WP, Cullimore KC, Dicken CH. Pancreatic panniculitis. J Am Acad Dermatol. 1995;33(3):413-7. doi: 10.1016/0190-9622(95)91385-8.
2. Requena L, Sánchez Yus E. Panniculitis. Part II. Mostly lobular panniculitis. J Am Acad Dermatol. 2001;45(3):325-61; quiz 362-4. doi: 10.1067/mjd.2001.114735.
3. Dalrymple LS, Johansen KL, Chertow GM, Cheng SC, Grimes B, Gold EB, et al. Infection-related hospitalizations in older patients with ESRD. Am J Kidney Dis. 2010;56(3):522-30. doi: 10.1053/j.ajkd.2010.04.016. Erratum in: Am J Kidney Dis. 2012;60(2):334.
4. Pomerantz ER, Hackley MA, Lawlor CE, Lee D, Thampy D, Brownstone ND, et al. A Scoping Literature Review of Pancreatic Panniculitis. Cureus. 2025;17(1):e78000. doi: 10.7759/cureus.78000.
5. Narváez J, Bianchi MM, Santo P, de la Fuente D, Ríos-Rodriguez V, Bolao F, et al. Pancreatitis, panniculitis, and polyarthritis. Semin Arthritis Rheum. 2010;39(5):417-23. doi: 10.1016/j.semarthrit.2008.10.001.
6. Miulescu R, Balaban DV, Sandru F, Jinga M. Cutaneous Manifestations in Pancreatic Diseases-A Review. J Clin Med. 2020;9(8):2611. doi: 10.3390/jcm9082611.
7. Pérez-Garza DM, Chavez-Alvarez S, Ocampo-Candiani J, Gomez-Flores M. Erythema Nodosum: A Practical Approach and Diagnostic Algorithm. Am J Clin Dermatol. 2021;22(3):367-378. doi: 10.1007/s40257-021-00592-w.
8. Nigwekar SU, Thadhani R, Brandenburg VM. Calciphylaxis. N Engl J Med. 2018;378(18):1704-1714. doi: 10.1056/NEJMra1505292.
9. Takanashi S, Akiyama M, Nishina N, Kaneko Y, Takeuchi T. Characteristics and prognosis of IgG4-related skin disease: A case report and systematic literature review. Autoimmun Rev. 2021;20(5):102805. doi: 10.1016/j.autrev.2021.102805.
10. Selvaraj V, Dapaah-Afriyie K. A Tale of Two Ps: Panniculitis Secondary to Acute Pancreatitis. Cureus. 2021;13(12):e20504. doi: 10.7759/cureus.20504.