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CASE REPORT

Pancreatic Panniculitis Complicated by Asymptomatic Acute Pancreatitis with Biliary Stricture: Analysis of a Misdiagnosed Case

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Abstract: This report describes a case of pancreatic panniculitis secondary to acute pancreatitis caused by biliary stricture following multiple biliary surgeries. The aim is to highlight the importance of recognizing atypical presentations. The patient, a 46-year-old woman, presented with erythematous macules and nodules on the extremities accompanied by polyarthralgia. She had a history of multiple biliary surgeries over the past decade. Histopathological examination of the skin lesions revealed no significant epidermal abnormalities but demonstrated perivascular neutrophilic infiltration in the dermis and subcutaneous fat, with evidence of adipocyte necrosis, calcification, and ghost cell formation. Laboratory findings indicated hyperamylasemia; however, the initial imaging did not suggest pancreatitis and there are no relevant clinical symptoms, which contributed to the misdiagnosis. This case underscores the need for heightened awareness of atypical clinical manifestations in pancreatic-related conditions.

Keywords: pancreatic panniculitis, acute pancreatitis, biliary stricture, hyperamylasemia

Introduction

Pancreatic panniculitis (PP) is a rare cutaneous manifestation of extrapancreatic involvement, often misdiagnosed due to overlapping symptoms with rheumatic or dermatological disorders[1]. Its pathogenesis is related to the extravasation of pancreatic enzymes leading to subcutaneous fat necrosis, typically presenting as painful erythematous macules, nodules on the extremities, and possible arthritis.[2] Most cases are associated with acute pancreatitis or pancreatic tumors, whereas those secondary to acute pancreatitis caused by biliary stricture following biliary surgery are rarely reported. This article explores the clinical features and misdiagnosis analysis of PP through a complex clinical case.

Case Presentation

The patient, a 46-year-old woman, presented with erythematous macules, nodules, and pain in the extremities for over one month. One month prior, she developed painful erythematous macules and nodules on the lower extremities (Figure 1). Initially diagnosed with erythema nodosum in an external hospital, she was treated with methylprednisolone, antibiotics, and topical physical therapy; however, the skin lesions did not improve and gradually spread to the upper extremities (Figure 2). Some nodules enlarged into cystic lesions (Figure 3), accompanied by erythema, swelling, and pain in the hands, knees, and elbows. The patient had a history of multiple biliary surgeries for choledocholithiasis, including biliary exploration and cholecystojejunostomy, with postoperative biliary stricture. Laboratory tests showed markedly elevated serum lipase and amylase levels, but early imaging did not reveal pancreatic abnormalities. Additionally, the absence of fever, abdominal pain, muscle rigidity, or violaceous discoloration of the waist and abdomen led to an initial diagnosis of erythema nodosum with hyperamylasemia. Treatment with increased doses of glucocorticoids administered intravenously resulted in slight improvement of the skin lesions; however, the condition remained

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Figure 1 Scattered erythematous macules and nodules, ranging in size from broad beans to coins and accompanied by tenderness on palpation, are observed on the lower extremities. (**A**) Erythematous macules and nodules on both lower extremities. (**B**) Erythematous macules and nodules on the left lower extremity.
Notes: ↑ indicates "erythematous macules and nodules".

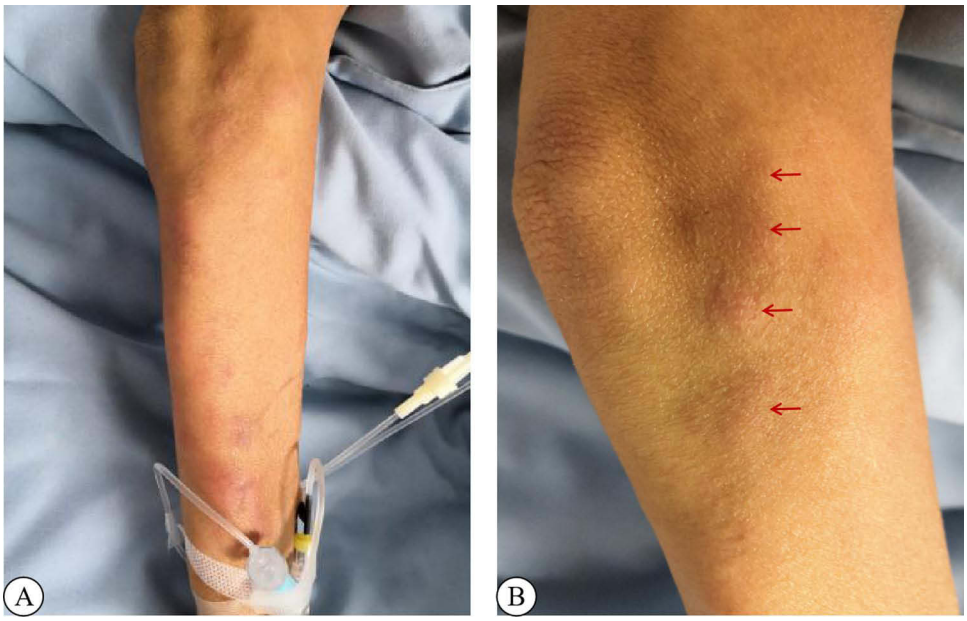

Figure 2 Similar erythematous macules and nodules, varying in size from broad beans to coins and associated with tenderness on palpation, are noted on the upper extremities. (**A**) Erythematous macules and nodules on the right forearm. (**B**) Erythematous macules and nodules on the right elbow.
Notes: ↑ indicates "erythematous macules and nodules".

unstable with persistent pain and new lesion formation. Subsequent laboratory and imaging evaluations revealed serum amylase peaking at 9437.2 U/L, lipase>3000 U/L, and a white blood cell count of 15.61×10^9/L. Magnetic resonance imaging/magnetic resonance cholangiopancreatography (MRI/MRCP) demonstrated pancreatic duct dilation (5.2 mm) and common bile duct stricture, while positron emission tomography-computed tomography (PET-CT) indicated diffuse pancreatic inflammation. Histopathological examination of the skin revealed chronic perivascular inflammation in the dermis accompanied by lobular panniculitis with fat necrosis, calcification, and ghost cell formation (Figure 4). Fine-

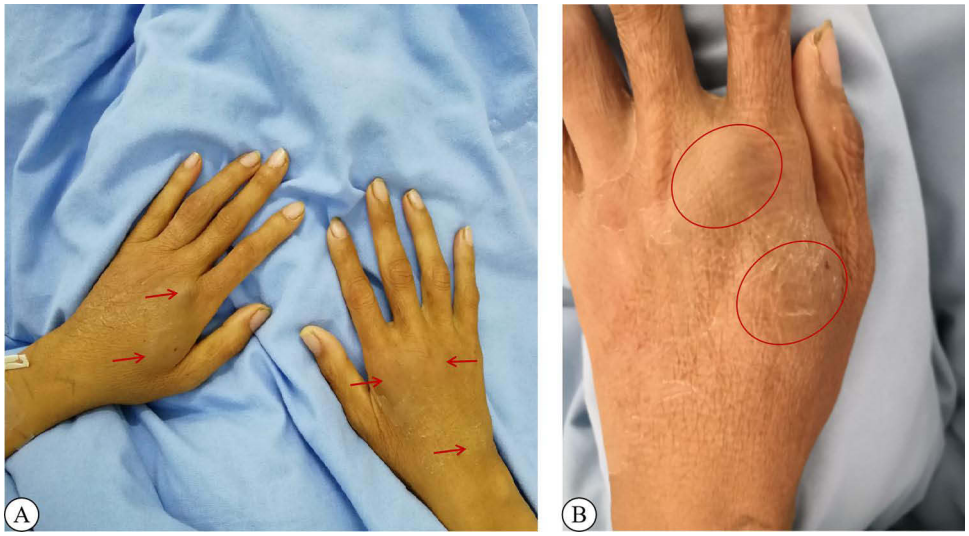

Figure 3 Scattered nodules on both hands are seen to have enlarged, exhibiting a cystic appearance. (**A**) Nodules on the dorsa of both hands. (**B**) Nodules on the dorsum of the left hand.
Notes: ↑ and ○ indicate "nodules".

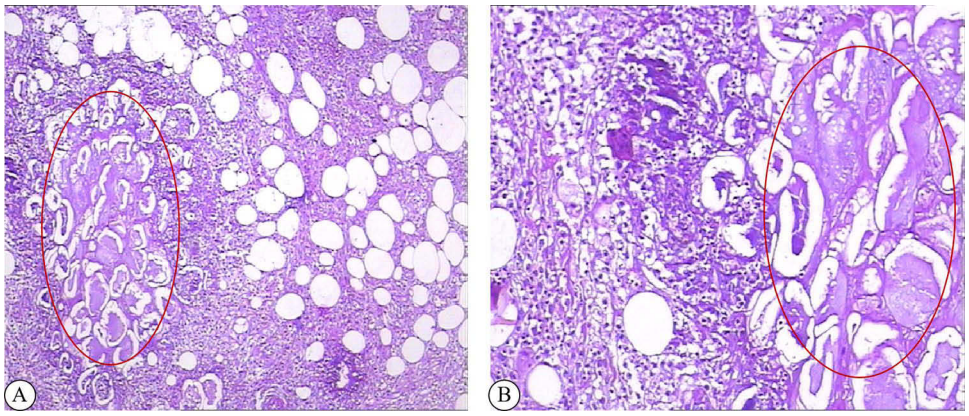

Figure 4 Histopathological appearance of the skin lesions. (**A**) H&E (×40). (**B**) H&E (×100).
Notes: ○ indicates "the ghost cells".

needle aspiration of a swelling on the dorsal left hand yielded dark brown mucoid material, with microscopy revealing abundant mucoid substances and numerous lymphocytes and histiocytes.

The diagnosis was revised to PP secondary to acute pancreatitis. Treatment with somatostatin and gabexate failed to significantly improve enzyme levels. Based on imaging findings, the patient's history of multiple biliary surgeries, and resistance to somatostatin therapy, it was concluded that pancreatitis was likely secondary to postoperative biliary stricture. Endoscopic retrograde cholangiopancreatography (ERCP) was recommended but declined by the patient. Three months after discharge, the patient succumbed to cachexia.

Discussion

PP is a rare subcutaneous fat necrosis disorder associated with pancreatic pathology, classically presenting as scattered erythematous nodules or plaques—predominantly on distal lower extremities but occasionally generalized—with frequent cyst formation, ulceration, and oily discharge due to enzymatic fat liquefaction.[3] Additionally, fat necrosis may involve joints, leading to polyarthritis affecting the ankles, knees, and elbows, with an incidence of 54%–88%, a condition termed the pancreatitis, panniculitis, and polyarthritis (PPP) syndrome, which is often associated with a poor prognosis.[4]

Table 1 Comparative Clinical and Diagnostic Features of Nodular Diseases

Disease	Key Clinical Features	Characteristic Laboratory/Pathological Findings
PP	Tender nodules (legs); Pancreatic disease (abdominal pain, steatorrhea)	↑Serum amylase/lipase; CT/MRI: Pancreatic abnormalities; Histo: Lobular panniculitis with ghost cells
EN	Acute, tender nodules (pretibial); Fever/arthralgia	↑ESR/CRP; Histo: Septal panniculitis (no vasculitis); No specific serology
EI	Ulcerating nodules (posterior calves); TB association	TB-positive (T-SPOT/PPD); Histo: Lobular panniculitis + granulomatous vasculitis
PAN	Systemic vasculitis (renal, neuro, GI); Subcutaneous nodules, ulcers	ANCA (-); ↑ ESR/CRP; Angio: Microaneurysms; Histo: Necrotizing medium-vessel vasculitis
NV	Recurrent nodules (legs); Skin-limited; Rare ulceration	Histo: Lobular panniculitis + venulitis; No systemic markers

Abbreviations: PP, Pancreatic Panniculitis; EN, Erythema Nodosum; EI: Erythema Induratum; PAN, Polyarteritis Nodosa; NV, Nodular Vasculitis; Histo, Histopathology; TB, Tuberculosis; GI, Gastrointestinal; ANCA, Antineutrophil Cytoplasmic Antibodies; ESR, Erythrocyte Sedimentation Rate; CRP, C-Reactive Protein.

PP presents significant diagnostic challenges, as it is frequently misdiagnosed early as common inflammatory nodular disorders like erythema nodosum or nodular vasculitis due to overlapping cutaneous presentations (Table 1). Critical differentiators include: (1) persistent hyperamylasemia/hyperlipasemia, which is pathognomonic for PP but absent in other entities; (2) histopathologic identification of "ghost cells" (anucleate necrotic fat cells) within lobular panniculitis; and (3) its exclusive association with underlying pancreatic pathology—even when subclinical—unlike systemic vasculitides (eg, polyarteritis nodosa) or tuberculosis-driven conditions (eg, erythema induratum). Notably, PP precedes pancreatic disease diagnosis in 44.8% of cases,[5] underscoring its role as a sentinel sign of occult pancreatic illness.

Management hinges on addressing the primary pancreatic disease: urgent biliary decompression (eg, stenting/surgery) is indicated in obstruction-related cases to halt enzymatic autodigestion, with enzyme normalization correlating to rapid resolution of cutaneous/articular symptoms; however, refractory PPP syndrome carries a poor prognosis if extensive pancreatic necrosis exists. The present case highlights underreported complexities: (1) acute pancreatitis secondary to biliary stricture following multiple calculi surgeries—a rare etiology distinct from alcohol-, trauma-, or tumor-associated PP; (2) marked enzyme elevation and gland destruction despite the absence of abdominal symptoms, which delayed diagnosis; and (3) systemic complications (polyarthralgia, anemia, and hypoalbuminemia) that raised concerns for IgG4-related disease or myeloma. Broader clinical lessons emphasize that persistent enzyme elevation with nodular rash mandates pancreatic evaluation irrespective of symptoms, early biliary decompression may mitigate PPP progression, and histopathology remains definitive to exclude mimics.

In conclusion, PP serves as a critical dermatologic harbinger of pancreatic disease—particularly asymptomatic acute pancreatitis—necessitating heightened suspicion guided by enzymology (persistent hyperenzymemia) and histology (ghost cells), especially when structural pancreatic abnormalities coexist; prompt intervention for obstruction-related PP (eg, biliary drainage) may improve prognosis, contrasting with the grave outcomes of advanced PPP syndrome.

Ethical Statement

Ethical approval is not required for this case report, and the images provided do not allow for patient identification.

Informed Consent Statement

Written consent for the publication of the case and photographs, both online and in print, was obtained from the patient's close relative.

Disclosure

Xiaofeng Chen and Zhuofu Luo are the co-first authors. The authors declare that they have no competing interest for this work.

References

1. Aourag M, Tjwa ETTL, Te Groen M. Pancreatic Panniculitis. *Clin Gastroenterol Hepatol*. 2024;23. doi:10.1016/j.cgh.2024.08.052
2. Okazaki T, Takahashi T, Asano Y. Pancreatitis, panniculitis, and polyarthritis (PPP) syndrome associated with acute-on-chronic pancreatitis: a case report. *J Dermatol*. 2025;52(1):e30–e31. doi:10.1111/1346-8138.17406

3. Barros S, Relvas L, Carvalho I, et al. Acute pancreatitis with panniculitis: a rare and striking clinical presentation. *Rev Esp Enferm Dig*. 2025. doi:10.17235/reed.2025.11022/2024
4. Suszek D, Wielosz E, Suszek M, et al. Fatal case of pancreatic panniculitis and polyarthritis due to pancreatic neuroendocrine tumor: a case report and review of literature. *Rheumatol Int*. 2025;45(4):69. doi:10.1007/s00296-025-05823-5
5. Pomerantz ER, Hackley MA, Lawlor CE, et al. A scoping literature review of pancreatic panniculitis. *Cureus*. 2025;17(1):e78000. doi:10.7759/cureus.78000