

CASE REPORT

Acute Septal Panniculitis. A Cutaneous Marker of a Very Early Stage of Pancreatic Panniculitis Indicating Acute Pancreatitis

Maria Antony Johnson, Devy Gounder Kannan, Tirupporur Govindaswamy Balachandar, Satyanesan Jeswanth, Shanmugasundaram Rajendran, Rajagopal Surendran

Centre for GI Bleed and Division of Hepato-Biliary Pancreatic Diseases, Department of Surgical Gastroenterology, Government Stanley Medical College Hospital, Affiliated to the Tamilnadu Dr. M.G.R. Medical University. Chennai, India

ABSTRACT

Context Pancreatitis may occasionally be complicated by panniculitis as a result of the release of pancreatic enzymes. Pancreatic panniculitis is rare, occurring in 2-3% of all patients with pancreatic disorders, with a higher incidence among alcoholic males.

Case report A 29-year-old male was admitted to our Department with acute abdominal pain one day following alcohol consumption. On physical examination, tender erythematous plaques and nodules were present on the left ankle and the pretibial regions of both lower legs, a clinical sign of panniculitis indicating acute pancreatitis common in alcoholic patients. Abdominal ultrasonography showed a diffusely edematous pancreas suggestive of acute pancreatitis. Abdominal contrast enhanced computerized tomography revealed features suggestive of severe acute pancreatitis with pancreatic necrosis. A skin biopsy confirmed the diagnosis of septal panniculitis without vasculitis or fat necrosis, which is indicative of a very early stage of pancreatic panniculitis suggesting acute alcoholic pancreatitis.

Conclusion Septal panniculitis without vasculitis or fat necrosis is a cutaneous clinical marker which denotes a very early

stage of pancreatic panniculitis associated with acute alcoholic pancreatitis. The treatment of pancreatic panniculitis is primarily supportive and depends on the underlying pancreatic pathology which may include surgery or endoscopic management.

INTRODUCTION

Panniculitis is defined as an inflammation of the layer of subcutaneous fat underlying the epidermis of the skin. Enzymatic or pancreatic panniculitis is a type of panniculitis which results from the saponification or necrosis of fat secondary to the action of liberated pancreatic enzymes in pancreatic diseases [1]. Pancreatic panniculitis affects 2-3% of all patients with diseases of the pancreas [2]. In 40% of the cases associated with pancreatic induced subcutaneous fat necrosis, skin lesions were the presenting feature [3].

The clinical picture of pancreatic panniculitis consists of tender erythematous plaques and nodules 1-2 cm in size, commonly located in the distal parts of the lower extremities (around the ankles and pretibial regions of the legs) and only occasionally on the arms and trunk. In milder cases, the nodule can be single [4] and can resolve itself without ulceration. In other cases, the nodules may be



Figure 1. Clinical photographs showing erythematous plaques and nodules (arrows) on the ankle, pretibial region and dorsum of the foot.

fluctuant and may evolve into sterile necrotic abscesses which spontaneously ulcerate exuding a thick brown oily material, due to liquefaction fat necrosis. In the very early stage of pancreatic panniculitis [5], a septal pattern of panniculitis is seen characterized by lymphoplasmacytic infiltration along the fibrous septa surrounding the subcutaneous fat lobules and around the dermal blood vessels.

CASE REPORT

We report the case of a 29-year-old male, an alcoholic and a smoker, who presented with acute abdominal pain, one day after alcohol consumption. On the day of admission, his vital parameters were normal and on examination of the abdomen, there was only epigastric tenderness. On the 12th day from the onset of acute abdominal pain, skin lesions appeared as tender erythematous plaques on the left ankle, on the pretibial regions of both legs and along the medial aspect of the dorsum of the right foot. On the same day, an erythematous nodule 0.5 cm in size appeared near the base of the second toe on the dorsum of the right foot as well (Figure 1).

His hemoglobin value was 12.6 g/dL (reference range: 13.5-17.0 g/dL), total WBC was 10,600 mm⁻³ (reference range: 4,000-11,000 mm⁻³), coagulation profile and platelet counts were normal. His serum amylase was 838 IU/L (reference range: 0-96 IU/L), serum lipase was 96 IU/L (reference range: 0-190 IU/L) and other laboratory tests were normal. Chest X ray, electrocardiogram and upper GI endoscopy were normal. Abdominal



Figure 2. Contrast enhanced computerized tomography showing an edematous pancreas with pancreatic necrosis (arrows), suggestive of acute necrotizing pancreatitis.

ultrasonography done on the day of admission - i.e., two days after the onset of acute abdominal pain - showed a diffusely

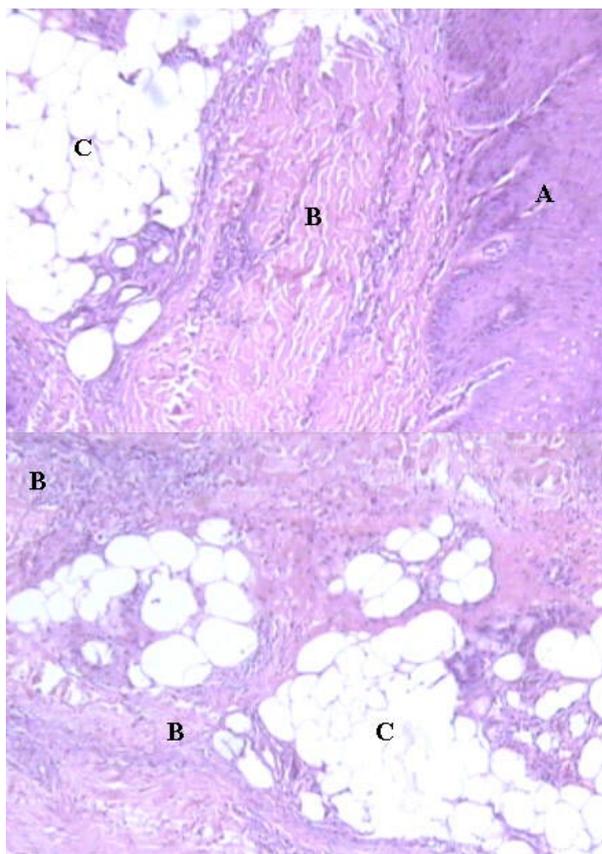


Figure 3. Septal panniculitis: histopathological microphotograph. A low power microscopic view shows a normal epidermis (A) with lymphoplasmacytic infiltration along the fibrous septa (B) in between the subcutaneous fat lobules (C) and around the dermal blood vessels suggestive of a very early stage of pancreatic panniculitis.

edematous pancreas, suggestive of acute pancreatitis. On the eighth day, the patient showed clinical deterioration in the form of recurrent episodes of fever (temperature 38.2 °C) and tachycardia (pulse rate 134 beats/min). On the eighth day from the clinical onset of acute pancreatitis, abdominal contrast enhanced computerized tomography (Figure 2) was performed. It revealed features suggestive of severe acute pancreatitis with pancreatic necrosis. To confirm infection of the pancreatic necrosis, which is common during the second week of severe acute pancreatitis, ultrasound-guided percutaneous fine-needle aspiration of the pancreatic necrosis was done on the ninth day from the clinical onset of acute pancreatitis. There was no growth of organisms on cultures of the aspirate.

The skin lesion, which appeared on the 12th day from the clinical onset of acute pancreatitis, lasted for 15 days and resolved spontaneously with conservative management of acute pancreatitis. Surgical skin biopsy showed lymphoplasmacytic infiltration along the fibrous septa surrounding the subcutaneous fat lobules and around the dermal blood vessels suggesting septal panniculitis, a very early stage of pancreatic panniculitis (Figure 3). Subsequent ultrasonography on the 20th day showed a well-organized inflammatory mass 8x4 cm in size in and around the body of the pancreas, suggestive of organized pancreatic necrosis. The acute pancreatitis was treated conservatively and the patient recovered well. The patient has been symptom free during 6 months of follow-up. Complete resolution of the pancreatitis with no *sequelae* was found on follow-up ultrasonographic examination.

DISCUSSION

The most common pancreatic disorders associated with pancreatic panniculitis are acute or chronic pancreatitis [6] (especially alcohol related) and pancreatic carcinoma (usually acinar cell carcinoma, less frequently islet cell carcinoma [7]). Rarely are other pancreatic disorders associated with pancreatic panniculitis, including post-traumatic pancreatitis [8], pancreatic pseudocysts [7], pancreas divisum [9] and vascular pancreatic fistulas [1, 10]. Pancreatic panniculitis has recently been reported in association with primary human immunodeficiency virus (HIV) infection and a hemophagocytic syndrome [11]. The pathogenesis is still unknown, but released pancreatic enzymes, such as trypsin, may increase the permeability of the microcirculation and lymphatic channels [12]. Lipase or amylase then causes subcutaneous fat necrosis in the lobules. Fat saponification combined with secondary pannicular inflammation results in 'lobular panniculitis', characteristic of pancreatic panniculitis. The diagnosis of panniculitis frequently requires deep skin biopsy. The most important

histological characteristic is the location of the inflammatory process. Inflammation primarily in the fibrous septa is designated as septal panniculitis, whereas inflammatory cells primarily in the fat lobules designate lobular panniculitis. In the very early stage of pancreatic panniculitis, a septal pattern of inflammatory involvement characterized by lymphoplasmacytic infiltration in the fibrous septa surrounding the subcutaneous fat lobules has been described by Ball *et al.* [5]. This type of septal panniculitis was also encountered in our patient as a cutaneous marker of a very early stage of pancreatic panniculitis indicating acute alcoholic pancreatitis, which was confirmed by histopathological examination of a skin biopsy specimen.

In general, the main histopathological feature of pancreatic panniculitis is predominantly lobular panniculitis without any vasculitis [6]. A predominantly neutrophilic lobular inflammatory infiltrate is seen surrounding the foci of subcutaneous fat necrosis. This pancreatic coagulative fat necrosis is characterized by a collection of 'ghost cells' which are anucleate adipocytes containing intracytoplasmic fine basophilic granular material (calcification) from the saponification of fat secondary to the action of liberated pancreatic enzymes on subcutaneous fat [1, 6]. The resistance of the fat cell membrane to lipase produces the shadowy cell walls ('ghost-like cells' [13]) and the fatty acids combine with calcium to form calcium soaps. In much older lesions, the infiltrate is more granulomatous containing foamy histiocytes and multinucleated giant cells.

Acute panniculitis is classified as, 'panniculitis without systemic disease' usually due to trauma or exposure to cold and 'panniculitis with systemic disease' usually due to collagen vascular diseases, pancreatic diseases and lymphoproliferative disorders [6, 13, 14].

'Septal panniculitis without vasculitis', especially on the anterior leg, is diagnostic of erythema nodosum but can also be seen in a very early stage of pancreatic panniculitis [5]

associated with acute pancreatitis, scleroderma, eosinophilic fasciitis, dermatomyositis and necrobiosis lipoidica diabetorum. 'Septal panniculitis with vasculitis' is diagnostic of cutaneous polyarteritis associated with granulomatous bowel disease [6, 13, 14].

'Lobular panniculitis without vasculitis' is commonly associated with pancreatic diseases and is also seen with systemic diseases such as Weber Christian disease (systemic nodular panniculitis), lupus erythematosus, sarcoidosis, granuloma annulare, Sweet's disease associated with alpha₁-antitrypsin deficiency, deep fungal infections and acute sudden weight loss from gastrointestinal surgery. 'Lobular panniculitis with vasculitis' is characteristic of nodular vasculitis and erythema induratum [6, 13, 14].

The treatment of choice for pancreatic panniculitis is treatment of the underlying pancreatic disorder [13]. The resolution of panniculitis after the placement of a pancreatic duct stent in chronic pancreatitis has been reported by Lambiase *et al.* [15]. Surgical correction of an anatomical pancreatic ductal anomaly or pancreatic pseudocyst can result in the complete resolution of panniculitis. The prognosis is worse for cases of pancreatic panniculitis associated with pancreatic carcinoma [12].

CONCLUSION

Septal panniculitis without vasculitis and fat necrosis or saponification (apart from the classical lobular pattern of pancreatic panniculitis) denotes a very early stage of pancreatic panniculitis. This rare cutaneous manifestation is seen in acute alcoholic pancreatitis, particularly in males.

The treatment of pancreatic panniculitis is primarily supportive and depends on the underlying pancreatic pathology which may include surgery or endoscopic management.

Received April 1st, 2005 - Accepted April 29th, 2005

Keywords Fat Necrosis; Pancreatitis, Alcoholic; Panniculitis

Correspondence

Maria Antony Johnson
Department of Surgical Gastroenterology
Government Stanley Medical College
Hospital
Old Jail road, Royapuram
Chennai-600001, Tamilnadu
India
Phone: +91-44.2528.1354
Fax: +91- 44.834.3728
E-mail: stanleygastro@yahoo.com

References

1. Dahl PR, Su WP, Cullimore KC, Dicken CH. Pancreatic panniculitis. *J Am Acad Dermatol* 1995; 33:413-17. [PMID 7657863]
2. Sibrack LA, Goutermann IH. Cutaneous manifestations of pancreatic diseases. *Cutis* 1978; 21:763-8. [PMID 207490]
3. Saag KG, Niemann TH, Warner CA, Naides SJ. Subcutaneous pancreatic fat necrosis associated with acute arthritis. *J Rheumatol* 1992; 19:630-2. [PMID 1593588]
4. Sanchez MH, Fernandez RS, Gomez-Calcerrada MR. Single nodule pancreatic panniculitis. *Dermatology* 1996; 193:269. [PMID 8944358]
5. Ball NJ, Adams SP, Marx LH, Enta T. Possible origin of pancreatic fat necrosis as a septal panniculitis. *J Am Acad Dermatol* 1996; 34:362-4. [PMID 8655727]
6. Freedberg Irwin M. Fitzpatrick's Dermatology in General Medicine. 6th ed. New York, NY, USA: McGraw Hill. Vol.I 1052-3,1062.2004. [ISBN 71380760]
7. Millns JL, Evans HL, Winkelmann RK. Association of islet cell carcinoma of pancreas with subcutaneous fat necrosis. *Am J Dermatopathol* 1979; 1:273-80. [PMID 232377]
8. Lee MS, Lowe PM, Nevell DF, Fryer J, Le Guay J. Subcutaneous fat necrosis following traumatic pancreatitis. *Australas J Dermatol* 1995; 36:196-8. [PMID 8593107]
9. Haber RM, Assaad DM. Panniculitis associated with a pancreas divisum. *J Am Acad Dermatol* 1986; 14:331-4. [PMID 3950133]
10. Requena L, Sanchez Yus E. Panniculitis. Part-II. Mostly lobular panniculitis *J Am Acad Dermatol* 2001; 45:325. [PMID 11511831]
11. Martinez-Escribano JA, Pedro F, Sabater V, Quecedo E, Navarro V, Aliaga A. Acute exanthem and pancreatic panniculitis in a patient with primary HIV infection and haemophagocytic syndrome. *Br J Dermatol* 1996; 134:80 4-7. [PMID 8733398]
12. van der Zee JA, van Hillegersberg R, Toonstra J, Gouma DJ. Subcutaneous nodules pointing towards pancreatic disease: pancreatic panniculitis. *Dig Surg* 2004; 21:275-6. [PMID 15308866]
13. Moschella SL, Hurley HJ. *Dermatology*. 3rd ed. WB Saunders 1993; 1316-7. [ISBN 721632637]
14. Champion RH, Burton JL, Ebling F. *Textbook of Dermatology*, 6th ed, Vol.III. Oxford, UK: Blackwell Publishing, 1998:2413-5. [ISBN 0-632-03796-2]
15. Lambiase P, Seery JP, Taylor-Robinson SD, Thompson JN, Hughes JM, Walters JR. Resolution of panniculitis after placement of pancreatic duct stent in chronic pancreatitis. *Am J Gastroenterol* 1996; 91:1835-7. [PMID 8792709]