Case report

Pancreatic necrosis in progressive systemic sclerosis

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SUMMARY Fatal pancreatic necrosis, secondary to extensive acute arteritic changes, is reported in a case of progressive systemic sclerosis. The patient presented first with hypertension and renal involvement, with active vascular lesions demonstrated by biopsy. The renal lesion at necropsy was inactive, showing the characteristic concentric fibrosis only, while the pancreatic vascular lesions were both chronic proliferative and acute in type.

Progressive systemic sclerosis (PSS), or scleroderma, is regarded as a complex disease of vascular, connective tissue, and inflammatory reactions.¹ According to some, scleroderma is essentially a vascular disease involving the arterioles and the capillary bed in many tissues, and the pathological findings are sequelae of the vascular lesions.^{2,3} Vascular complications occur in scleroderma, but are less common than in periarteritis nodosa or lupus erythematosus.⁴ The vascular lesions involve both skin^{2,5–9} and internal organs, most commonly heart,^{2–4,7} lung,^{4,6,8,10} gastrointestinal tract,^{4,7,8,10,11} kidney,^{2,4,6,12,13} spleen,⁶ liver,⁵ and skeletal muscle.¹⁰ This is a report of fatal pancreatic infarction and acute haemorrhagic pancreatitis secondary to occlusion of medium-sized pancreatic arteries, a finding so far unreported in this disease.

Case report

A 55-year old white female with skin features typical of PSS and a long history of mild hypertension (180/80 mmHg) was admitted to hospital on 15 December 1974. Her disease had become manifest about a year before, with prominent involvement of the kidneys, leading to renal failure shortly after the onset of clinical symptoms and requiring haemodialysis. She had no Raynaud's phenomenon. She had repeated episodes of fibrinous pericarditis, requiring partial pericardiectomy. Her last admission (14 March 1975) was precipitated by subarachnoid haemorrhage. Despite therapy her condition grad-

ually deteriorated and was characterised by progressive weakness and obtundation. She died of cardiac failure on 4 April 1975.

PATHOLOGICAL OBSERVATIONS

A renal biopsy specimen showed the presence of advanced vascular changes, namely, concentric thickening of intima with fibroblast-like cells present (Fig. 1) together with active disease (endarteritis) in small arteries.

At necropsy the subarachnoid haemorrhage was found to be slight and localised to 1 side of the cerebellum. Massive pancreatic necrosis, clinically unexpected, was a cause of death.

Fig. 1 Renal artery with concentric thickening of the intima and with fibrinoid necrosis of the wall. H and E, $\times 185$

Histologically, all sections of the pancreas showed vascular changes of scleroderma to a varying extent, involving arteries of various calibres. Recent thrombotic endarteritis was found with extensive secondary infarction of the body of the pancreas (Fig. 2). Probably as an earlier change acute panarteritis in some of the medium-sized arteries was present (Fig. 3). Other muscular arteries showed segmental necrosis of the wall, with fibrosis and in some recanalised thrombi. Many arteries showed only bland concentric fibrosis of intima (Fig. 4) or onion-skinning of the wall. There was mild atrophy of exocrine pancreas with focal fibrosis of the interstitium.

Fig. 2 Pancreatic artery with recent occlusive thrombosis. Necrosis of pancreatic parenchyma (upper right corner) and inflammatory cell infiltration. *H and E*, $\times 45$

Fig. 3 Pancreatic artery with acute inflammatory cell infiltration. *H and E*, $\times 70$

Fig. 4 Pancreatic artery with concentric fibrosis of the intima. *H and E*, $\times 120$

Cardiomegaly was present (weight 550 g), with scattered foci of expanded interstitium with loose amphophilic-staining ground material. Some of the smaller arteries showed marked adventitial onion-skin cuffing; others showed intimal fibrosis. Fibrinous pericarditis was present. Lung changes included left lower lobe atelectasis with focal embolic acute pneumonitis. In the kidney the disease was inactive at necropsy; no thrombotic or active arteritic changes were present. The characteristic endarteritic changes involved many of the moderate-calibre arteries, interlobular and arcuate. The glomeruli showed a corresponding degree of ischaemic changes, with only rarely sclerosis of glomeruli. Atrophy of tubules was not marked, and there were only focal areas of interstitial early fibrosis. The examined segments of oesophagus and the gastrointestinal tract were uninvolved. Sections of skin showed focal dermal fibrosis consistent with scleroderma. There was no myositis. An increased amount of haemosiderin was present in the liver, spleen, and lymph nodes, a consequence of microangiopathic haemolytic anaemia and continued haemodialysis.

Discussion

The fundamental manifestations of the patient's disease were cardiovascular. Scleroderma was diagnosed by the typical clinical features of the disease, and by the histological skin, renal, myocardial, pericardial, and lung alterations. The diagnosis of scleroderma on renal histology alone, however, is difficult, or tenuous in the presence of long-standing hypertension (especially in the malignant

phase), as the pathological changes are generally similar.¹⁴ However, the normal gross weight of the kidneys, the only slightly granular cortical surface, and the absence of focal haemorrhage with fibrinoid necrosis of arterioles are features more characteristic of scleroderma than of nephrosclerosis. Other differential diagnostic possibilities with similar pathological alterations in the kidney (such as haemolytic uraemic syndrome of children, post-partum renal failure, and humoral allograft rejections) can be excluded. Serum antinuclear antibodies are prominent in PSS, being found in 40–90% of cases,¹⁵ and the patient's serum was positive for antinuclear antibodies. Heart and lung alterations were slight. Pericarditis, clinically not usual (16% in D'Angelo *et al.*'s series¹²), is commonly found at necropsy. Uraemic pericarditis, however, cannot be ruled out, although the patient was adequately dialysed.

The involvement of pancreas in PSS (in this case extensive and a major contributor to her death) is not recognised. A review of the literature failed to disclose a report of significant involvement of the pancreas. A photograph of a vessel with typical changes was published in a clinico pathological conference from the Massachusetts General Hospital without mentioning pathological changes in the pancreas itself.² However, cases of scleroderma have been reported with appearances of an acute abdomen with arteritis resulting in occlusion of one of the large mesenteric vessels and infarction of the bowels.^{16 17}

In this case the pancreatic alterations—a fatal complication of her disease—should be ascribed to the vascular changes of the pancreas. The pathological sequelae of the acute arteritis of the pancreas in this case are even more striking in view of the rarity of vascular lesions of this organ resulting in thrombosis. The earliest report of a case dates back to 1900 by Chian,¹⁸ and only 7 additional cases were reported between 1900 and 1947.¹⁹ Twenty more cases were listed by McKay *et al.* before their survey of 24 481 consecutive necropsies at the Mayo Clinic between 1924 and 1955, which identified 44 additional cases.

Corticosteroid-induced pancreatic lesion can be excluded, as the patient was only briefly treated with steroids (at the time of pericardiectomy), and the

steroid-caused pancreatic alterations described²⁰ are different, being focal and interstitial.

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