onset of symptoms. Rupture of a popliteal cyst and acute rupture of the knee may occur in rheumatoid arthritis, and both may produce identical signs and symptoms.⁴ In these patients the presence of a popliteal cyst noticed by the patients themselves and its subsequent disappearance suggests that the calf swelling was due to leakage from the cyst rather than rupture of the joint. What is not clear is why there was an associated pyogenic arthritis. Did the infection in the knee occur before the rupture and actually cause the cyst to rupture by retrograde spread of infected synovial fluid, or was the synovial fluid completely sterile at the time of rupture only to become subsequently infected perhaps in the presence of a transient bacteraemia? Aspiration of synovial fluid from the knee for analysis and culture is therefore advisable in any patient presenting with a ruptured popliteal cyst, particularly the elderly.

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Acquired alpha₂ antiplasmin deficiency in glomerular proteinuria

Antithrombin III deficiency has been described in patients with proteinuria, where it is thought to be due to glomerular leak.¹ Such deficiency has been proposed as an important factor in the aetiology of the tendency for venous thrombosis in these patients. The major plasmin inhibitor, α_2 -antiplasmin, has a molecular weight of $65\text{--}70 \times 10^3$ and might also be expected to leak through damaged glomeruli. We have therefore measured α_2 -antiplasmin concentrations in the plasma of 20 patients with the nephrotic syndrome.

Patients, methods, and results

α_2 -Antiplasmin concentrations were measured in the plasma of 20 patients with moderate to severe glomerular proteinuria confirmed by renal biopsy and in nine normal controls. Assay was performed by immunoelectrophoresis, as described.² Simultaneous urine samples were obtained from eight of these patients and five controls and assay of unconcentrated urine and diluted plasma performed in parallel.

α_2 -Antiplasmin concentrations in 20 patients with nephrotic syndrome and nine controls

Patients			Controls		
Subject	Plasma ("u)	Urine	Subject	Plasma ("u)	Urine
1	90		1	115	Nil
2	91		2	105	Nil
3	25		3	115	Nil
4	84		4	83	Nil
5	46		5	88	Nil
6	43		6	109	
7	37		7	125	
8	55		8	83	
9	69		9	95	
10	102				
11	66	Trace			
12	92	Nil			
13	44	Trace			
14	127	Trace			
15	66	Trace			
16	84	Trace			
17	70	Trace			
18	100	11"			
19	96				
20	64				
Mean $\pm$ SD	72.6 $\pm$ 26.0*			102.0 $\pm$ 15.4*	

*Unpaired *t* test: *p* < 0.01.

The table gives the results. Significantly lower α_2 -antiplasmin values were found in patients with the nephrotic syndrome, 11 out of 20 showing values below the normal range (*p* < 0.01; unpaired *t* test). The unconcentrated urine showed detectable α_2 -antiplasmin antigen in seven of the eight patients studied. In one patient the concentration was 11% of the plasma value, though he maintained a normal plasma value.

Comment

α_2 -Antiplasmin and α_2 -macroglobulin are the two main inhibitors of plasmin. Of these, α_2 -antiplasmin is recognised as the major inhibitor of plasmin. Its action is very rapid, so that α_2 -macroglobulin inhibits only when large amounts of plasmin are generated.³ Concentrations of α_2 -macroglobulin may be raised in the nephrotic syndrome.⁴ In contrast, our study shows that α_2 -antiplasmin may be deficient and that the low values seen attributable at least in part to renal loss. There are three possible consequences of this deficiency of α_2 -antiplasmin. Firstly, the deficiency of the major, fast-acting antiplasmin may tend to counterbalance any predisposition to thrombosis caused by deficiency of antithrombin III. Secondly, deficiency of α_2 -antiplasmin may contribute to the increase in glomerular fibrinolytic activity observed in patients with glomerulonephritis⁵ and contribute to the removal of intraglomerular fibrin deposits. Thirdly, the presence of such a potent plasmin inhibitor in urine may inhibit fibrinolysis in the urinary tract and may explain the observation that fibrinogen may be present intact in the urine in the nephrotic syndrome.

Requests for reprints should be sent to Dr D A Taberner.

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Hydralazine-induced necrotising vasculitis

The association of the "lupus" syndrome with hydralazine is well known but there have been only two reported cases of cutaneous vasculitis related to hydralazine.¹ Both of these cases were mild. We report a third case, with severe and widespread vasculitic lesions, associated with a hydralazine dose of only 75 mg/day.

Case report

A 69-year-old woman began treatment with hydralazine (75 mg/day) in 1972 for resistant hypertension. At the time she was also taking propranolol and hydrochlorothiazide. She remained well until December 1979, when she was admitted to hospital with a temperature of 38°C and multiple 2 × 2 cm haemorrhagic blisters on her lower legs (figure). She gave a two-week history of malaise and muscle pains. Shortly after admission additional lesions appeared on arms, trunk, nasal septum, and uvula. Hydralazine was stopped and no further blisters developed, but when several of the lesions began to ulcerate she was given a course of prednisolone and cyclophosphamide. All the affected areas gradually healed, but the most severely ulcerated lesions required skin grafting.

Results of investigations included erythrocyte sedimentation rate 130 mm in first hour, haemoglobin concentration 10.9 g/dl, white cell count $14.8 \times 10^9/l$ ($14\,800/mm^3$; 84% polymorphs), and normal routine biochemical

values. Blood and urine cultures, chest radiography, and complement fixation tests for mycoplasmas and herpes simplex were negative. Antinuclear antibody titre was 1/160. Serum C4 concentration was 0.14 g/l (normal range 0.2-0.5 g/l), and C3 concentration was normal. Skin biopsy showed acute haemorrhagic vasculitis.

Skin lesions in hydralazine-induced necrotising vasculitis.

Comment

Hydralazine has re-emerged as standard treatment for hypertension now that beta-blockers are available to prevent reflex tachycardia. It is generally believed that autoimmune complications are very unlikely in patients taking less than 200 mg hydralazine/day. Bing *et al*, however, reported a 3% incidence of "lupus" syndrome occurring in patients taking less than 200 mg daily.² Our patient developed severe necrotising vasculitis associated with a "safe" dose of hydralazine. Close monitoring is necessary for all patients taking long-term hydralazine.

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Diagnosis of aortic aneurysm using autologous platelets labelled with indium-111

The labelling of platelets with high-energy gamma-emitting radionuclides such as indium-111 has permitted in-vivo study of platelet kinetics, the calculation of platelet lifespan,¹ and the demonstration under some circumstances of atherosclerotic plaques,² acute renal allograft rejection,³ and platelet deposition on prosthetic material. We recently described the use of platelets labelled with indium-111 in detecting the presence and extent of venous thrombi.⁴ Deposition

of labelled platelets on thrombi is not, however, limited to those in the venous system, as the following observations indicate.

Case study

An obese 80-year-old woman was admitted to an orthopaedic ward after fracturing the neck of her left femur. Five days after operation her platelets were labelled with 200 μ Ci indium-111 oxine (Radiochemical Centre) in the course of a routine study for the detection of deep vein thrombosis. The methods used have been described elsewhere.^{4,5} Abdominal imaging obtained in this patient showed an accumulation of the radionuclide to the left of the midline in the mid abdominal region (figure). A lateral image

Anterior abdominal image of patient showing focal accumulation of platelets to left of midline in mid abdominal region.

showed this accumulation lying anterior to the spine. The location of this concentration suggested that it was unlikely to lie within the venous system, and ascending phlebography (including femoral puncture) confirmed this. Ultrasound examination of the abdomen showed the presence of an aortic aneurysm.

Comment

Our experience with indium-111-labelled platelets has shown that using them is a painless, accurate, and relatively non-invasive method of detecting venous thrombi. As thrombosis also occurs within arterial aneurysms it is not surprising that platelet deposition does too, though this has not yet been reported. So far we have seen three patients who have been diagnosed as having aortic aneurysms while being investigated with indium-111-labelled platelets for deep vein thrombosis. The possibility of aortic aneurysms must be kept in mind when interpreting results using this technique. Aneurysms at other sites, such as the femoral or popliteal arteries, may possibly also give rise to an erroneous diagnosis of venous thrombosis.

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