Cutaneous vasculitis and collapse

Calum C Lyon, Philip V Harrison

A 20-year-old man was admitted with a 1-week history of a vasculitic rash over both legs and aching in both calves. He felt otherwise well although he had suffered an upper respiratory tract infection 2 weeks previously, manifesting as a mild sore throat for 1 day. Apart from a small ventriculo-septal defect (VSD) reviewed annually, he had no significant medical or dental history and took no medications. He gave no history of intravenous drug abuse.

General physical examination was unremarkable. In particular, there was no lymphadenopathy or splenomegaly and he was consistently afebrile. A long-standing pansystolic murmur, grade 3/6, was confirmed at the cardiac apex, heart rate was 70 in sinus rhythm and blood pressure was 120/70 mmHg. Admission investigations including full blood count, antinuclear antibodies, complement, renal and liver function tests, were normal. A throat swab was negative for bacterial growth and an anti-streptolysin-O (ASO) titre was within normal limits. The erythrocyte sedimentation rate (ESR) was elevated at 45 mm/h and immune complexes were detectable in serum. Antineutrophil cytoplasmic antibodies, cytoplasmic pattern (cANCA) were detected by both indirect immunofluorescence on whole neutrophils and using a proteinase 3 ELISA. There was blood and protein detectable in the urine although it was negative for casts and bacterial growth.

These findings were consistent with a diagnosis of small vessel vasculitis and he was commenced on oral prednisolone 35 mg daily and topical betamethasone cream 0.1%. Skin biopsy subsequently showed only non-specific mild inflammation and direct immunofluorescence examination of a skin specimen was normal. The rash settled rapidly allowing cessation of his treatment, but he was admitted acutely, 5 weeks after the onset of symptoms, with collapse secondary to a sustained tachyarrhythmia and with a florid recrudescence of his rash (figure 1). On admission, his heart rate and blood pressure were normal and auscultation confirmed the pansystolic murmur as before. He was now pyrexial with a temperature of 38°C. A transthoracic echocardiogram was performed (figure 2).

Figure 1

Figure 2 Transthoracic echocardiogram

Questions

- 1 What pathological feature seen on echocardiography (other than the VSD), would account for all the other clinical and laboratory findings?
- 2 What are the most likely causative agents and where are they usually found?
- 3 Why was the ASO titre normal?

Queen Victoria
Hospital, Thornton
Road, Morecambe,
Lancashire LA4 5NN,
UK
C C Lyon
P V Harrison

Correspondence to
CC Lyon, Hope Hospital,
Stott Lane, Salford M6
8HD, UK

Accepted 23 April 1998

Answers

QUESTION 1

The patient had a subacute presentation of infective endocarditis. The echocardiogram demonstrates a vegetation on the tricuspid valve leaflet adjacent to the VSD (figure 3).

Figure 3 Echocardiogram

QUESTION 2

Serial blood cultures performed on the second admission all showed a heavy growth of *Streptococcus sanguis*, a viridans group, α -haemolytic streptococcus. Many of the bacteria in this group, which also includes *S mutans* and *S mitior*, are frequently encountered oral commensals, commonly implicated in bacterial endocarditis. As in our case, there may not be a history of recent dental treatment or oral trauma.

QUESTION 3

Streptolysin O is a haemolysin with toxic effects on the heart. It is produced by β -haemolytic streptococci, usually groups A, C or G. With α -haemolytic species such as *S mutans* one would not expect to find a raised ASO antibody titre.

Discussion

It is probable that the rash which prompted the patient's first admission was the result of the cardiac infection which progressed and precipitated his subsequent collapse. Cutaneous small-vessel vasculitis is not uncommon and although triggers including infection, drug

ingestion and malignancy are often cited, the underlying cause is only discovered in 39–61% of cases.¹ On initial presentation with vasculitis our patient had neither signs nor symptoms which suggested cardiac or other infection as a cause for his rash. However, the history of VSD at his first presentation might have prompted more rigorous investigation for a cardiac cause even in the absence of some of the more typical findings in subacute bacterial endocarditis. These include malaise, pyrexia, Osler's nodes, Janeway lesions, changing murmurs, splinter haemorrhages and splenomegaly. Microscopic haematuria and mild arthralgia are common findings in both endocarditis and idiopathic vasculitis.

Immune complexes are frequently detected in both infective endocarditis and idiopathic vasculitis and they are useful in monitoring progress during treatment. ANCA are also important markers for primary vasculitides. They are detected by indirect immunofluorescence assays on ethanol-fixed human neutrophils. Two staining patterns are seen: perinuclear (pANCA), largely due to myeloperoxidase, and cytoplasmic (cANCA) involving proteinase 3, a serine proteinase. The latter can be determined more precisely using an ELISA technique which increases the specificity of cANCA for primary vasculitis. The association of a positive cANCA with infective endocarditis has been the subject of two recent case reports.^{2,3} In both of these cases and the one described here, anti-proteinase 3 activity was clearly demonstrated. It is unclear whether cANCA titres in infective endocarditis relate to the associated cutaneous or renal vasculitic process and if their presence in an unexplained small-vessel cutaneous vasculitis warrants investigation to exclude endocarditis. It also remains to be established if the presence of these antibodies reflects a pathogenic role.

Our patient was commenced on intravenous benzylpenicillin 7.2 g per 24 hours for 4 weeks, changing to oral amoxycillin 500 mg tid for a further 6 weeks. His recovery was uneventful and there was full and rapid resolution of the vasculitic rash.

Final diagnosis

Subacute bacterial endocarditis.

Keywords: bacterial endocarditis; vasculitis; *Streptococcus sanguis*

1 Jorizzo JL, Solomon AR, Zandhi MD, et al. Neutrophilic vascular reactions. *J Am Acad Dermatol* 1988;19:983–1005.
2 Soto A, Jorgenson C, Oksman F, et al. Endocarditis associated with ANCA. *Clin Exp Rheumatol* 1994;12:203–4.

3 Wagner J, Andrassy K, Ritz E. Is vasculitis in subacute bacterial endocarditis associated with ANCA? *Lancet* 1991;337:799–800.