CASE REPORT

Peripheral gangrene during infancy: a rare presentation of systemic lupus erythematosus

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Abstract

An 11 month old boy presented with gangrene of the extremities. He was found to have positive nuclear antibodies and antibodies to double stranded DNA, and negative Ro and La antibodies. The infant was started on oral prednisolone, which was discontinued after six months. At one year of follow up he was asymptomatic, with negative nuclear antibodies and antibodies to double stranded DNA.

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Systemic lupus erythematosus (SLE) begins in childhood in 20% of patients, but rarely occurs before the age of 5 years.¹ A few reports have described what appears to be true SLE in infants, particularly in association with nephrotic syndrome.¹ Although there have been reports of digital gangrene in children and adults with SLE, peripheral gangrene in an infant with SLE is extremely rare. We report the case of an 11 month old boy with SLE presenting with gangrene of both the upper and lower limb extremities.

Case report

An 11 month old boy was born after a normal pregnancy and delivery. His parents and siblings were healthy. He was well until the age of 11 months, when he developed a febrile illness associated with breathlessness and loose stools. Four days later, there was erythematous discoloration of the skin of both lower limbs associated with swelling of both feet. This was followed six days later by blister formation in the same areas.

He was first seen at this hospital on the 15th day of his illness, when he was febrile, looked pale, and had mild respiratory distress. His four limb blood pressure was normal. There were bluish black discolored skin lesions—both macules and papules over the dorsum of both feet and on the dorsal aspect of the left hand. Systemic examination was normal. We made a provisional diagnosis of septicæmia caused by either *Pseudomonas aeruginosa* or *Staphylococcus aureus*.

Initial investigations gave the following results: haemoglobin, 75 g/l; total white cell count, 52.9×10^9 cells/l; neutrophil count, $37 \times$

10^9 cells/l. A peripheral smear showed microcytic hypochromic anaemia with anisopoikilocytosis. Platelet count was 1000×10^9 /l.

The infant was started on intravenous ceftazidime and given one packed cell transfusion. A blood culture grew acinetobacter, and a skin swab grew *Staphylococcus aureus*. As both organisms showed sensitivity to ceftazidime, treatment with this antibiotic was continued.

After two days of antibiotic treatment, the infant became afebrile, but the skin lesions worsened. The vesicles on both feet had increased. Peripheral extremities became cold and cyanosed. Pulsation ceased in both the posterior tibial and dorsal pedis arteries as well as the left radial artery. On the fourth day after admission, gangrene was noticed on the tips of all toes and the tips of all fingers of the left hand, which were extremely tender. Vasculitis was suspected, and the infant was started on oral prednisolone (2 mg/kg/day). On the fifth day, gangrenous changes were noticed on the scrotal skin.

Further investigations showed a normal bleeding profile and a negative sickle cell test. Serum mercury and ergot tests gave negative results. Erythrocyte sedimentation rate was 50 mm/h, and serum IgA and IgM levels were normal. Serum IgG was raised at 21.11 g/l (normal range 5–12 g/l). No rheumatoid factor was detected. Nuclear antibodies were positive at 18.32 arbitrary units (AU)/ml (upper range of normal being 14) and antibodies to double stranded DNA were positive at 39.12 AU/ml (upper range of normal being 26). Ro and La antibodies were negative. A diagnosis of SLE was made. C3 level was normal and cardiolipin antibodies were negative. Chest radiographs, electrocardiographs, renal variables, and cerebrospinal fluid analyses were normal.

After seven days of treatment, his blood culture was negative and blood counts returned to normal. The mother was positive for nuclear antibodies (17 AU/ml) and antibodies to double stranded DNA (27.5 AU/ml) but negative for Ro and La antibodies.

During the second week, gangrene progressed to involve the whole of the left hand (fig 1). Pregangrenous changes were noticed on the finger tips of the right hand, and right radial artery pulsation ceased. After the appearance of a line of demarcation (15th day of admission), gangrenous tissue was excised under general anaesthesia. Histopathological

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Figure 1 Gangrenous areas of left hand and both feet of infant with systemic lupus erythematosus.

examination of excised gangrenous tissue showed ulcerated epidermis and non-specific granulation tissue. During the third week, the child started to recover. The pre-gangrenous changes in the right hand disappeared and there was no further progress of the vasculitic changes. All peripheral pulses became palpable. The child was discharged on oral prednisolone. On follow up, he has been asymptomatic. Prednisolone was tapered and discontinued after six months as nuclear antibodies and antibodies to double stranded DNA at 18 months of age were negative. At 2 years of age, the child is asymptomatic with negative nuclear antibodies and antibodies to double stranded DNA.

Discussion

In adults, gangrene has been described in many collagen diseases, but it is rare in children. End arteritis, although rare, is an important complication of SLE in which vasculopathy affects

arteries in the digits. Poor perfusion leads to ischaemia, with necrosis and infarction of the digits. The diagnosis can be confirmed by angiography, which shows loss of perfusion and narrowing of the radial or ulnar arteries and loss of flow to digital arteries.² Centrally infused prostaglandin E1 has been reported to reverse the vasospastic component.³

Gangrene of the extremities is very rare, occurring in about 1% of SLE patients, and most often affects the upper extremities.⁴ Gangrene in children with lupus has been described by several authors,^{5,6} but in the present case, the age of onset was very early at 11 months. As the Ro and La antibodies were negative, in both the infant and mother, neonatal lupus was excluded. We could not explain the high platelet count, although leucocytosis was probably due to the associated infection. Leucopenia occurs in about 50% of children with SLE. Leucocytosis is unusual, unless there is an associated infection. Similarly, fever in patients with lupus is often a result of infection rather than of active lupus. Serum γ globulin levels are often elevated in SLE. Levels of one or more individual immunoglobulins may be raised as seen in our case.

The recommended treatment for vasculitis is steroids. Azathioprine can be added if steroids are not effective. This child appeared to respond to steroids judging by the appearance at follow up.

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