Peripheral Symmetrical Gangrene Treated with Sildenafil Citrate

Sir,

A 17-year-old girl presented with dusky cyanosis of both feet with painful symmetrical swelling involving the dorsa of feet and toes for 1 week. She gave a history of high-grade fever associated with chills and rigours for the last 1 week. She denied history of any preceding trauma, thrombo-embolic episodes in the past, joint pains, photosensitivity, malar rash, oral ulceration or significant drug intake. General physical examination revealed a febrile patient with pallor and pitting pedal oedema. Cutaneous examination revealed dusky cyanosis over the dorsa of feet and all toes symmetrically. The overlying skin was cold to touch with reduced sensations to touch, pain and temperature [Figures 1 and 2]. All the peripheral pulses of the involved limbs were normal. On investigations, haemoglobin was 9.5 g/dl, total leukocyte count 24,000/mm^3, and the platelet count was 20,000/mm^3. Fibrin degradation products were markedly raised with a value of 12,966 (normal, 800). Prothrombin time and partial thromboplastin time were increased: 17 (control=12) and 40 (control= 25), respectively. The blood culture grew *Pseudomonas aeruginosa*. Tests for HIV and hepatitis B surface antigen were negative. The 2D echocardiography of the heart and a Doppler study of lower limbs were essentially normal. A clinical diagnosis of symmetrical peripheral gangrene (SPG) due to *Pseudomonas* septicaemia was made and the patient was started on antibiotics. In addition, supportive management with intravenous fluids, low-molecular-weight heparin and sildenafil citrate 25 mg twice daily was started. After a week of starting the treatment, the condition of the patient improved with a reduction in swelling and dusky erythema [Figure 3]. At discharge, the area of involvement had markedly decreased with a limited residual involvement of tips of toes [Figure 4].

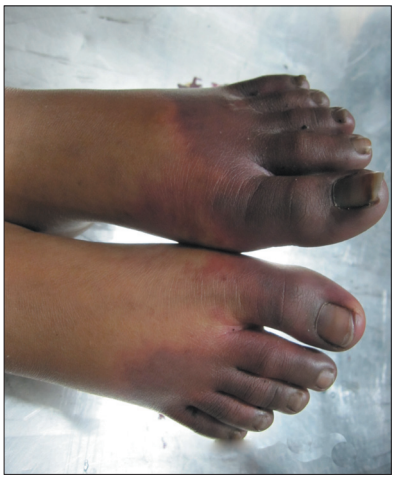

Figure 1: Dusky cyanosis present over distal feet including all toes and proximal forefeet

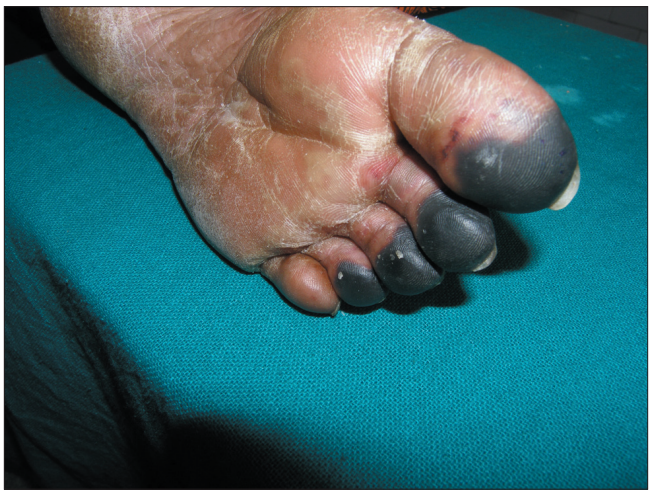

Figure 2: Gangrene over distal toes

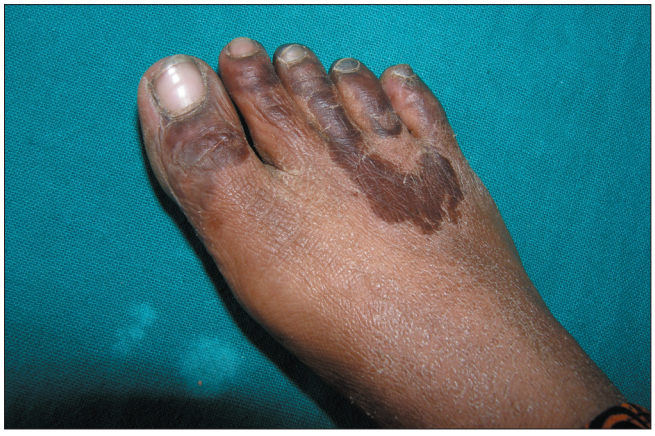

Figure 3: Improvement after 6 weeks

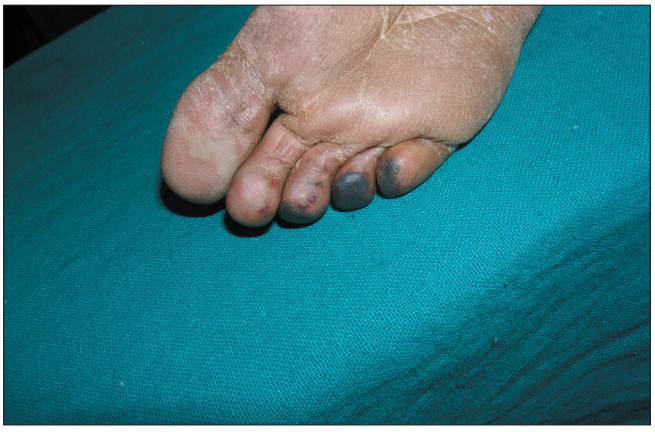

Figure 4: Residual changes in toes after 6 weeks

Symmetric peripheral gangrene is defined as the symmetrical distal ischaemic damage at two or more sites in the absence of large-vessel obstruction.[1] It has been proposed to be a cutaneous marker of disseminated intravascular coagulation. Fever followed by marked coldness, pallor, cyanosis, pain and restricted mobility of extremity should always raise suspicion of SPG. Common organisms involved are pneumococcus, staphylococcus and streptococcus, but Gram-negative organisms have also been implicated.[2] SPG can also occur as a complication of measles, chickenpox, malignancy, ergotism, and protein C or S or antithrombin III deficiency. Aggravating factors are diabetes mellitus, increased sympathetic tone, asplenia, immunosuppression, cold injury to extremities, renal failure and use of vasopressors. Low flow circulation and septicaemia play a pivotal role in the development of SPG.[3,4] Early intervention with antibiotics, intravenous fluids, anticoagulants including low-molecular-weight heparin, and reduction or removal of aggravating factors is the essential line of treatment. Intravenous nitroprusside, prostaglandins (e.g. epoprostenol), topical nitroglycerine ointment, papavarine, reserpine, streptokinase, dextran (Lo-Mo-Dex), hyperbaric oxygen and sympathetic blockers have been tried with little success.[4] Despite therapeutic interventions, different studies report mortality up to 40% and an amputation rate of 30–50%.[1,5] Sildenafil citrate is a competitive inhibitor of an enzyme of the phosphodiesterase type 5 (PDE-5) class. It has been used in erectile dysfunction, pulmonary artery hypertension, Raynaud's phenomenon, digital ulceration in systemic sclerosis.[6] There are no published reports on the use of sildenafil in SPG in the literature. We decided to use this drug taking an analogy from the use of this drug in impending gangrene in patients of progressive systemic sclerosis. We could retrieve majority of the involved tissue with the limitation of gangrenous changes to tips of the toes [Figure 4]. We recommend that sildenafil citrate should be used as a first line therapy in SPG.

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