

# Chemical burns beneath tourniquets

J C Dickinson, B N Bailey

Department of Plastic Surgery, Stoke Mandeville Hospital, Aylesbury, Buckinghamshire

J C Dickinson, FRCS, senior registrar in plastic surgery

B N Bailey, FRCS, consultant plastic surgeon

Correspondence to: Mr Dickinson.

Pneumatic tourniquets are widely used in surgery of the arms and legs; many complications have been reported, but skin damage is said to be uncommon.<sup>1</sup> Its causes are pressure necrosis or shearing due to inadequate padding or poor application in patients with loose or thin skin. Attention has been drawn to the possibility of burns under the cuffs of pneumatic tourniquets in young children.<sup>2</sup> The consensus was "that the damage was caused by spirit solutions seeping beneath tourniquets and being held tightly against the rather delicate skin of children. The problem has not been known to arise when aqueous solutions are used as skin preparation." This view was supported by Evans, who reported full thickness skin loss after a swab impregnated with spirit was left beneath a tourniquet.<sup>3</sup> We report four cases to show that skin burns can be a sequel of incorrect technique.

## Case reports

Three patients aged less than 2 with syndactyly sustained four burns beneath the cuffs of pneumatic tourniquets. The skin preparation used was a tincture of povidone-iodine with an alcohol content of 70%. In all cases the burns were seen when the tourniquet was removed; the preparation seemed to have run down the patient's arm and been absorbed by the padding under the tourniquet cuff. In two cases the area of iodine

staining corresponded exactly with the area of burn. In the other two cases the burns were smaller than this area. The burns were all partial thickness and healed within four weeks, leaving minimal scarring.

The tourniquets were checked after each incident and found to be functioning satisfactorily. They had been applied in the usual way under the supervision of the operating surgeon, as in many previous, similar cases.

## Comment

These four burns show that a burn can be caused by 70% alcohol held in contact with young skin under pressure for 60-90 minutes. Skin preparations with a high alcohol content left in contact with the skin distal to the tourniquet have not caused burns in our experience. Preparations with a high alcohol content are used both for the bacteriocidal effect of the alcohol and as degreasing agents to allow better penetration of the povidone-iodine. The flammable nature of spirit preparations is well recognised, and precautions must be taken. We and our colleagues have not seen burns when other types of preparation (including aqueous iodine) have been used.

If alcohol preparations are used they must not be allowed to run down the arm and under the tourniquet. If this should happen the tourniquet should be re-applied with fresh padding. All theatre staff should be aware of the danger.

1 Palmer AK. Complications from tourniquet use. *Hand Clin* 1986;2:301-5.

2 Anonymous. Tourniquets and theatre safe guards. *Journal of the Medical Defence Union* 1985;1:2.

3 Evans DM. Tourniquets. *Journal of the Medical Defence Union* 1985;1:22.

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# Sweet's syndrome in Crohn's disease

Daniel Kemmett, David J Gawkrödger, Graeme Wilson, John A A Hunter

University Department of Dermatology, Royal Infirmary, Edinburgh

Daniel Kemmett, MRCP, registrar

David J Gawkrödger, MRCP, lecturer

John A A Hunter, FRCP, professor

We report on two women who developed Sweet's syndrome during exacerbations of Crohn's disease of the colon. We do not think that this association has been reported previously.

## Case reports

### CASE 1

A 52 year old woman presented with diarrhoea streaked with blood and epigastric pain. Her rectal mucosa was inflamed and bled easily on sigmoidoscopy. Rectal biopsy showed non-specific proctitis, and a barium enema showed changes limited to the distal colon. She subsequently developed an anal fistula, which was excised, and histological examination showed submucosal granulomas and foreign body giant cells suggestive of Crohn's disease. A further fistula was excised, and two weeks later she developed a fever and erythematous pustular lesions 2 cm in diameter over her forearms, thighs, neck, and trunk.

Her white cell count was  $11.6 \times 10^9/l$  (88% neutrophils, 10% lymphocytes, and 2% monocytes), haemoglobin concentration 86 g/l, and erythrocyte sedimentation rate (Westergren) 86 mm in the first hour. Biopsy of a representative lesion from her neck showed the typical histological features of Sweet's syndrome with an infiltrate predominantly of

polymorphonuclear cells with nuclear fragmentation in the upper and mid dermis. Prednisolone 30 mg daily was started. Her temperature returned to normal within 24 hours, and the skin eruption cleared within 10 days. One month later a proctocolectomy was performed for her colonic Crohn's disease. The dose of prednisolone was reduced and then stopped within three months. She remained well at one year with no recurrence of Sweet's syndrome.

### CASE 2

A 25 year old woman presented with a one year history of intermittent bloody diarrhoea and an anal fissure. The fissure was excised, and histological examination showed submucosal granulomas. Nine months later she had a further acute episode of bloody diarrhoea associated with bilateral iridocyclitis and an erythematous papular rash on her legs. Her temperature was normal. Prednisolone was started at 40 mg daily, and azathioprine 150 mg daily was added 10 days later. After six weeks the dose of prednisolone was reduced to 20 mg daily, but she then developed a fever and erythematous lesions 1 cm in diameter, some showing pustulation. Her white cell count was raised at  $13\,400 \times 10^9/l$  (90% neutrophils), and her erythrocyte sedimentation rate was 57 mm in the first hour. Biopsy of a typical lesion showed a predominantly neutrophilic, perivascular infiltrate in the upper dermis with fragmentation of white cells. Prednisolone was increased to 60 mg daily, and the skin lesions resolved within seven days. She had a panproctocolectomy three months later, and histological examination confirmed colonic Crohn's disease. She remained well at four years and did not have any further skin disease.