Hair tourniquet syndrome in an infant

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An 11-week-old infant presented with swelling and discoloration of the left second toe because of hair thread tourniquet syndrome. This was treated by urgent surgical release of the constricting band, with a successful outcome. The authors stress the importance of recognising this rare condition and of prompt, complete, surgical release.

Case report

An 11-week-old infant presented with swelling and red discoloration of the left second toe of several hours’ duration, associated with increasing restlessness. The mother pulled a tuft of hair from between the second and third toes with her fingers about an hour before the swelling began. On examination, the infant was afebrile and there were no clinical signs of systemic upset. Inspection of the toe revealed a circumferential constriction at the level of the proximal interphalangeal joint, with much swelling of the soft tissues distally and splitting of the skin on the plantar surface of the toe (Fig. 1). Capillary refill appeared to be brisk at the tip of the toe, but there was concern that the developing congestion would cause ischaemia. There was nothing to suggest non-accidental injury. The third toe showed evidence of an incipient constriction band that had settled spontaneously.

To avoid further circulatory embarrassment, the infant was taken to theatre urgently, where a short longitudinal incision was made down to the bone dorsally over the area of strangulation, away from the extensor tendon (Fig. 2). The constricting band, which was at a deeper level than expected, was released both visibly and palpably. The wound was not sutured and healed satisfactorily. Post-operatively, the child was given a short course of prophylactic antibiotics (flucloxacillin 62.5 mg orally, four times daily and phenoxymethylpenicillin 62.5 mg orally, four times daily, for five days), and the swelling resolved rapidly.

Discussion

Hair tourniquet syndrome is the circumferential strangulation of one or more appendages by human hair or fibres, and is a surgical emergency. It occurs infrequently, and the incidence is not known. Most of the published literature is in journals of paediatrics or emergency medicine. Descriptions of the condition in orthopaedic texts have only appeared in subspecialty journals, such as Hand Surgery1,2 and Foot and Ankle Surgery.3-4

This syndrome typically occurs in infants, but has also been described in adults with reduced mental capacity.5 If left untreated it may induce prolonged ischaemia, resulting in tissue necrosis or autoamputation of the appendage. Fingers and toes have been more recently described, but earlier papers6-8 described involvement of external genitalia, and there have also been rare cases of strangulation of the uvula and neck.9,10

One possible risk factor is telogen effluvium, the hair loss commonly experienced by women after giving birth,11 which reaches its peak at around four months. Other associations are chemotherapy,12 the wearing of mittens, or old, frequently washed clothes.13 An association with non-accidental injury has been postulated, and in some cases a competently fixed knot was said to have been found.14-16 However, there was no suggestion of non-accidental injury in our patient. It is right to consider...
deliberate harm in any situation where the mechanism of injury is not clear. A prompt, careful and tactful search for other clues to abuse in the patient or their siblings should be made before reaching a decision regarding the possibility of abuse.

Differential diagnoses of hair tourniquet syndrome include ainhum (dactylosis spontanea) and any of the other causes of pseudoainhum (of which hair tourniquet syndrome is a subgroup and cicatrix another).

Correct early management of the acute strangulation is important, as progressive oedema exacerbates the constriction. Some conservative measures have been suggested, such as hair removal with fine scissors and forceps under magnification, or soaking the body part in depilatory cream to weaken the fibres. A trial of such conservative measures would, however, seem inappropriate as the hair fibres are not always easy to see and may cut through the oedematous skin to become deeply embedded in the subcutaneous tissue, as occurred in this patient. Skin may re-epithelialise over the subcutaneous hairs, obscuring the cause. The constricting thread may therefore not be visible, and only the swelling and redness of the affected part noted. One pitfall in dealing with this condition is in complete release of the band. Conservative cuts in the accident and emergency department may not release all the constricting fibres, and might be inadequate. We would advise urgent complete release in the operating theatre.

Guidance for new parents may help prevent the problem, and we hope that raising awareness in the orthopaedic community may improve the management and outcome of established cases.

No benefits in any form have been received or will be received from a commercial party related directly or indirectly to the subject of this article.

References