Hair Tourniquet Syndrome: A Unique Emergency Presentation of Two Digits with Hair Tourniquet

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ABSTRACT

Hair tourniquet syndrome (HTS) is an under-reported clinical state of a strand of hair or similar structure, such as a thread, which constricts an appendage, leading to pain, swelling, and potential ischaemia. The authors found a case of a 2-month child who presented with swelling and discolouration of toes secondary to a hair tourniquet with associated inflammation and severe pain. Despite parental attempts to remove the hair, complete removal was impossible. Prompt intervention may resolve the condition, highlighting the importance of early recognition and treatment of such cases. Multiple toe involvement is not unique; on the contrary, this is quite common in literature, and around one third of cases have multiple toe involvement.

Key Words: *Hair tourniquet syndrome, Infant, Digital swelling, Early diagnosis, Management*.

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INTRODUCTION

A relatively rare but potentially organ-threatening hair tourniquet syndrome (HTS), predominantly affects infants due to fine fibre, threads, or hair (usually maternal), wrapped tightly around an appendage, commonly the fingers, toes, or genitalia.[1] However, child abuse may not be excluded and should always be considered in all cases of such torniquet.[2] HTS is an uncommon presentation and is reported in the literature as around 0.02%. The first reported case was documented in the literature in the 17th century.[3]

HTS can cause inflammation, ischaemia, and in severe cases, tissue necrosis, depending on the degree and duration of strangulation and may lead to gangrene and/or amputation. Early recognition and intervention are vital.[4,5]

This case involves a hair tourniquet affecting two toes in an infant and underscores the importance of accurate assessment and timely management.

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CASE REPORT

A 2-month female infant presented to the paediatric emergency with severe pain, inconsolable and excessive crying, swelling, and redness of her third and fourth left toes. This was noticed by her mother as a strand of hair tightly encircling the third and fourth toes of her left foot. She removed the hair from the third toe but could not successfully remove it from the fourth. The fourth toe exhibited progressive swelling, redness, and painful movement. There was no history of allergies or injuries, and no known exposure to loose threads, fibres, or hair was identified. No history of trauma or insect bite. The history of child abuse was also investigated from both the father and the mother separately. Parents used to live alone, and there was no nanny to take care of the mother and the child. Both parents were very much concerned, and the history coincided with each other. This was the first child in the family, and no new member had been added since her birth.

Upon detailed systemic examination, she was perfectly normal and well thriving. On local examination of the toe, the fourth toe looked inflamed, red, swollen, and tender with visibly deep constriction (location) due to the hair with painful movement (Figure 1). No cyanosis or ischaemic discolouration was identified. The third toe had some residual swelling and erythema, and previously removed tourniquet was confirmed by the parents. Imaging was not required given the clinical diagnosis.

The area of constriction was inspected closely under good lighting. A magnifying loupe was used to locate the offending hair, which was wrapped tightly around the proximal part of the middle toe. Hair removal was attempted gently using fine forceps and scissors under sterile conditions. Given the deep

constriction and incomplete release, hair dissolution with depilatory cream (containing thioglycolate) was applied carefully to dissolve the embedded hair. Care was taken to avoid tissue irritation. Successful release of the hair resulted in improvement of finger swelling and colour within 30 minutes (Figure 2). The finger was monitored for capillary refill and ischaemic changes. No signs of necrosis were seen. The infant was observed for a few hours before discharge.

Figure 1: Pre-procedure pictures of the third and fourth digits of the left foot with a hair band encircling completely.

Figure 2: Picture after the removal of the tourniquet from the third digit, the fourth digit hair tourniquet is still there.

Figure 3: After removal of the tourniquet from both digits.

The infant regained normal digital mobility and behaviour within 24 hours, and her cry and irritability resolved post-procedure. Swelling and redness in the fourth toe improved significantly after hair removal, with no signs of ischaemia or necrosis (Figure 3). Parents were reassured and educated on identifying and preventing future occurrences. Follow-up after 1 week revealed complete resolution of swelling and no tissue injury.

DISCUSSION

HTS cases usually present to the emergency department with excessive crying without any obvious clinical reason and are incidentally found to have inflammation of the area affected with oedema and swelling. The syndrome is preventable and easily manageable if identified early and managed appropriately.[4,6]

HTS is an important differential diagnosis in infants presenting with unexplained digital swelling, erythema, and pain. It most commonly involves fingers and toes and can be exacerbated by maternal hair loss, especially in the postpartum period (telogen effluvium).[5] The HTS usually affects the digit and penis; however, nipple, ear lobes, tongue, umbilicus, uvula, and genitalia may be involved.[7-9] While prompt removal of the tourniquet is crucial, embedded fibres may necessitate specialised tools, magnification, or the use of chemical depilatories for complete resolution. Failure to promptly recognise or address the condition can lead to ischaemic damage or even amputation.[10]

During the initial phase of HTS, it is difficult to identify as hair is usually embedded deep in the tissue and surrounding swelling obscures it. With time, when the tourniquet becomes dry, it may tighten and be embedded deeper into the tissue, and the inexperienced caregiver may lead to more oedema formation and strangulation, which may lead to tissue ischaemia, necrosis, and gangrene, and at times may lead to bone involvement and amputation.[4,10-13]

Physicians dealing with HTS may also need to consider other similar clinical situations, such as infection, insect bite, band, trauma, or allergic reaction, as these may mimic it.[10]

It is generally accepted that HTSs are accidental; however, literature also documents this as child abuse, and the latter must be investigated thoroughly in all cases of HTS.[11]

The delay in presentation will hamper the treatment as early removal of the tourniquet and release of the constrictors are possible by emergency physicians. The need of paediatric surgeons arises when the constrictor is unable to be visualised or is deep seated. Surgical incision with exploration of the area and suitable anaesthetic agents is the technique of choice for deeply embedded constrictors.

In this case, timely identification and non-invasive intervention ensured a favourable outcome. Educating caregivers about potential risk factors, such as loose hair and threads, and simple preventive measures can reduce the likelihood of recurrence.

Postpartum mothers, especially those with long hair, may need to be counselled and informed of the risk of HTS. However, child abuse must also be carefully reviewed.

HTS is an infrequent but serious cause of digital pain and swelling in infants. This case underscores the importance of prompt recognition, careful examination, and management to prevent complications. Parental awareness and education are critical for early intervention. There is also a need for clinicians to maintain a high index of suspicion for HTS to prevent complications.

PATIENT'S CONSENT:
Informed consent was obtained from the parents of the patient to publish the data concerning this case.

COMPETING INTEREST:
The authors declared no conflict of interest.

AUTHORS' CONTRIBUTION:
RSA: Concept drafting.
EUS: Design, revision, and accountable for all aspects of the work.
AO: Analysing and drafting.
KG: Concept, initial drafting, and revision.
QAA: Initial draft, design, and accountable for all aspects of the work.
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