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RESEARCH ARTICLE

A CASE OF HAIR THREAD TOURNIQUET SYNDROME OF THE TOE IN A MALE NEWBORN

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Abstract

Hair-thread Tourniquet Syndrome (HTTS), despite being widely reported, is often not well recognized. It is a rare surgical emergency. This syndrome involves the external, mechanical, circumferential constriction of an appendage by human hair, typically a digit, leading to a condition similar to compartment syndrome. If not treated promptly, it can lead to prolonged ischemia, potentially causing tissue necrosis or autoamputation of the affected digit. Herein, we report a four-day-old newborn from a low socioeconomic background was admitted with fever and feeding refusal. Clinical examination revealed a swollen and red big 4th toe with a hair-thread tourniquet. No signs of toe ischemia were noted. A diagnosis of maternal-fetal infection with a meningeal focus was made, along with toe tourniquet syndrome. Radiography showed no bone lesion. The patient was treated with antibiotics and a healing cream.

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Introduction:-

Hair thread tourniquet syndrome (HTTS), termed by Barton et al. in 1988, is a rare surgical emergency [1]. Although it usually manifests in infants, there have been reported cases in adults. It involves the acute circumferential strangulation of one or more appendages by human hair. This condition can affect various body parts with an end-artery, leading to a condition resembling compartment syndrome, such as fingers, toes, penis, or labia. Prompt diagnosis and treatment, including the full removal of the restricting element, are essential to preserve the affected tissue. If untreated, it can lead to prolonged ischemia, causing tissue necrosis or autoamputation of the affected digit. Many clinicians remain unaware of this syndrome. Our reported case highlights the importance of raising awareness of HTTS among physicians, emergency doctors, pediatricians, and surgeons to prevent adverse outcomes and tissue necrosis.

Case presentation

A four-day-old male newborn, born to parents with low socioeconomic status was brought to the emergency department for fever, refusal to breastfeed, increasing irritability and continuous crying. The perinatal history was normal, and all immunizations were current. Clinical examination revealed a fever with a rectal temperature at 38°C and a weight of 3,6kg. Examination of the feet revealed a swollen and erythematous fourth left toe with presence of a circumferential constriction around it (Figure 1).

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Figure 1:- Examination of the feet revealed a swollen and erythematous fourth left toe with presence of a circumferential constriction around it.

No signs of toe ischemia were observed. The capillary refill time was distally prolonged. Inspection revealed with a hair-thread tourniquet present around it. No swelling or erythema were found on the other toes. There was no reported history of injury to the affected digit. Infectious serologies were negative. Samples from blood, urine and swabs were negative for germs. C reactive protein was elevated at 42mg/L. The diagnosis of maternal-fetal infection with a meningeal focus was made in the presence of toe tourniquet syndrome. Radiologically, a standard radiograph was performed, showing no bone lesion of the toe. Antibiotic treatment was initiated during hospitalization. Conservative treatment with removal of the hair causing constriction using tissue forceps and a curved needle was performed, followed by application of a healing cream was indicated. The evolution was favorable.

Discussion:-

Hair-Thread Tourniquet Syndrome is characterized by the ischemic strangulation of a body part due to a band of hair or thread [2]. This condition was first described under its current name by Barton et al. in 1988 [2]. However, Hair-thread tourniquet syndrome (HTTS), has been documented as far back as the 17th century when a case involving strangulation of the glans penis by a hair was reported. The Lancet officially published a case in 1832 [3], and since then, HTTS has been well-documented in medical literature [4].

The compressive effect of the encircling material around the appendage leads to lymphatic obstruction and soft tissue edema. The obstruction of venous outflow and arterial perfusion is further exacerbated by the resulting swelling. If left untreated, this process will eventually result in tissue necrosis and autoamputation of the affected digit or appendage [5]. The duration of this process can range from hours to weeks [6]. It is important to counsel postpartum mothers about the risk of hair-thread tourniquet syndrome [2]. Clinicians should remain vigilant for non-accidental injury: Recurrent episodes of HTTS, inconsistent history, and multiple knots in the wrapping of the appendage have also been proposed as a worrisome feature [7]. Some authors have proposed that genital HTTS could result from "gratification disorder" or "infantile masturbation," which refers to general self-exploration [8]. This suggestion is particularly relevant given that masturbation is reported in 90–94% of males and 50–60% of females [9].

Hair is particularly suited to cause tourniquet syndrome due to its high tensile strength and its ability to tightly wrap around tissue [10]. Although documented in adults, this condition commonly affects the pediatric population, with infancy being the most vulnerable period. No gender predilection exists and both sexes are affected equally. In addition to toes, cases involving umbilicus, the earlobes, and tongue have also been reported [11]. HTTS has been

linked to postnatal telogen effluvium, a condition experienced by 90% of women, peaking between 2 and 6 months after childbirth [12]. Telogen is the phase in the hair cycle characterized by hair shedding, which is particularly pronounced during the hormonal changes following childbirth [13]. Diagnosing HTTS relies on clinical signs, typically including pain, discoloration, tingling, and swelling distal to a hair-constricted area. A high level of suspicion and thorough physical examination are essential since, in pediatric cases, irritability may be the sole initial symptom, potentially causing a diagnostic delay [2].

It is crucial to differentiate HTTS from congenital constriction band syndrome (amniotic band syndrome, Streeter's dysplasia), which is a rare congenital condition associated with other musculoskeletal disorders. Furthermore, in individuals of African descent, the presence of digital annular constriction, particularly on a toe, should raise suspicion of ainhum (dactylosisspontanea) or pseudo-ainhum, both of which include hair tourniquet syndrome as a subgroup [2].

On the therapeutic level, the suggested management in the emergency department includes pain management, thorough examination and removal of the constriction. Pain management can sometimes indicate moderate sedation using ketamine. Examination of the patient in a well-lit environment is necessary to avoid misdiagnosed that can delay the treatment [12]. The constricting band can be manually removed or depilatory agents can be used. Referral to the surgical team for examination under anesthesia may be necessary if the band is unclear or has retracted under the swollen skin [14].

Conclusion:-

Hair thread tourniquet syndrome typically manifests with pain, discoloration, tingling, and swelling in the affected appendage. This condition is considered a medical emergency as it can lead to progressive swelling, ischemia, and tissue necrosis, potentially resulting in autoamputation of the affected appendage. Children who seem irritable without other signs of systemic illness should have their digits examined for signs of strangulation. If it's not possible to remove the constricting ligature or if there is uncertainty about completely relieving the constriction, the patient should be referred for surgical exploration.

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