

Hair Tourniquet Syndrome in Children: A Review Article

Volkan Sarper Erikci*

Department of Pediatric Surgery, Tepecik Training Hospital, Sağlık Bilimleri University, Izmir, Turkey

***Corresponding Author:** Volkan Sarper Erikci, Department of Pediatric Surgery, Tepecik Training Hospital, Sağlık Bilimleri University, Izmir, Turkey.

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Abstract

Hair tourniquet syndrome (HTS) may be a challenge to the pediatrician. In this condition, a body appendage is firmly encircled by a various materials in a circular manner. These materials can be hair, thread or similar object. Most sites of involvement in body are fingers, toes and genitals. In order to attain favourable outcome and avoid hazardous consequences of this rare disease such as autoamputation in affected body part, prompt diagnosis and treatment is vital. The purpose of this study is to review the characteristics of HTS and its management options with a brief literature review.

Keywords: *Hair Tourniquet Syndrome; Children; Surgical Treatment*

Introduction

HTS is an uncommon condition rarely seen in children. In this disease the appendages are strangulated by a hair, a thread, or a fiber in a circumferential manner [1]. Guillimeau first described this entity in 1612. The condition was documented and published in 1832 [2,3]. Different terminologies for description of this scarce entity exist. These nomenclatures include syndrome of hair tourniquet, hair coil strangulation, toe tourniquet and hair thread tourniquet syndrome or acquired ring syndrome [4,5]. As a rule any appendage in the body may be affected by HTS. Fingers, toes and penis are usually affected by HTS [6,7]. Less commonly, there may be other parts of the body that can be involved by the disease as reported previously and these are clitoris, labia, ear lobes, umbilicus, nipple, tongue or uvula [1,8-13]. In a study comprising 210 cases of HTS, the different parts of the body have been affected by the disease in a decreasing order of frequency and of the patients 44.2% had penile HTS, 40.2% had involvement of toes by the disease, 8.6% had HTS of fingers and 6.8% of the patients presented HTS in other sites [1].

Most commonly young children are affected by HTS. The age range of the patients differ with respect to the site of the body involved by the disease. It has been reported that age ranges of patients with finger HTS and penile involvement have been found to be between the neonatal period of life up to 1.5 years and 4 months to 6 years, respectively [14]. With respect to labial and clitoral involvement by HTS, older age groups of children have been affected more compared to younger offsprings (age 7 - 13 years) [15].

The pathological explanation of HTS lies on the high traction resistance of hair making it as an effective turnstile. Besides moisture of the environment has an additive effect on this strain power [4]. The length of the hair changes depending upon the degree of humidity and hair elongates if there is much humidity while it constrains back to its normal size if there is no humidity in the environment. Thus the dry environment causes hair fiber to strangulate around an appendage causing the affected appendage to be hypoperfused [17]. Firstly, constricting hair reduces the venous and lymphatic drainage causing edema. Later on, if no precaution is taken, arterial supply to the affected body part reduces leading to ischaemia even autoamputation. It has been reported that this process of autoamputation can occur within hours to weeks [2,18]. For this reason it is paramount to recognize and manage these cases in order to prevent deficiency of function or decapitation of the affected apart of the body [19,20].

Differential diagnosis of HTS contain variety of diseases. These are infection, trauma, insect bite, allergic dermatitis, keratoderma and congenital bands [4]. Other disease states that should be differentiated form HTS include exploitation of child, ainhum that is the digital constriction affecting a toe, ainhum like states and paronychia [4,5]. There are various predisposing factors in HTS and one of them is “teleogen effluvium”. Because of maternal hormonal changes most of the mothers, during postpartum period, come up with excessive hair loss and this is called teleogen effluvium [21]. The babies of these mothers with teleogen effluvium are in danger of HTS and typically these children are younger than 4 months [21].

The gold standard in the treatment in HTS is prompt removal of the compressing fiber. There are various techniques of surgical intervention reported in the literature and these are detaching if there is minimal edema, cutting out of the tight stretched hair with scissors or scalpel blade. Depilatory creams are safe choice of treatment and they do not produce any discomfort but their usage is not approved [22]. Especially in late diagnosed patients having HTS surgical debridement is another option [1,23]. Our management in the presented study included removal of hair coil from the genitalia of our patients under local anesthesia with topical prilocaine using a clamp and scissors. Following this procedure edema resolved suddenly. Local treatment with antibiotic ointment was also found to be helpful in relieving the edema and inflammation after excision of the strangulating hair coil.



Figure 1: A female patient with HTS involving clitoris. (Arrow: encircling hair).



Figure 2: Postoperative view after removal of the hair.

Conclusion

HTS may cause diagnostic uncertainty for the clinicians dealing with these patients. If a child presents with a swollen appendage in any part of the body HTS should also be kept in mind and the medical providers should be cognizant of this rather rare entity. Children with HTS can be prevented from unwanted consequences of this entity and treated if these cases are diagnosed early and managed appropriately. In order to avoid undesirable outcomes like decapitating injuries, it is paramount to diagnose these children promptly and timely treatment is essential.

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