

Hair thread tourniquet syndrome in a toe of an 18 mo old girl

Jesse WP Kuiper, Niels de Korte

Jesse WP Kuiper, Niels de Korte, Department of Surgery, Spaarne Ziekenhuis, 2134 TM Hoofddorp, The Netherlands

Author contributions: Both authors contributed to this work.

Ethics approval: The study was reviewed and approved by the Spaarne Ziekenhuis Institutional Review Board.

Informed consent: All study participants, or their legal guardian, provided informed written consent prior to study enrollment.

Conflict-of-interest: No conflicts of interest to be declared.

Open-Access: This article is an open-access article which was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>

Correspondence to: Jesse WP Kuiper, MD, Department of Surgery, Spaarne Ziekenhuis, Spaarnepoort 1, 2134 TM Hoofddorp, The Netherlands. jwp.kuiper@gmail.com

Telephone: +31-23-8907450

Fax: +31-23-8907451

Received: December 27, 2014

Peer-review started: December 29, 2014

First decision: January 20, 2015

Revised: January 26, 2015

Accepted: February 10, 2015

Article in press: February 12, 2015

Published online: April 16, 2015

Abstract

Hair thread tourniquet syndrome is rare and usually affects little children. If the tourniquet is not incised, the affected body part becomes ischemic or even necrotic. An 18 mo old girl was seen in the emergency ward with a painful, red and swollen third toe of the left foot. The toe appeared to be strangulated with a hair, and the diagnosis hair thread tourniquet syndrome was made. After incision of the hair tourniquet the symptoms soon subsided. The diagnosis is easily made if the clinical features are recognized. However, if the

tourniquet is not cut through, the affected body part may become ischemic and even necrotic.

Key words: Hair; Thread; Tourniquet; Syndrome; Toe

© **The Author(s) 2015.** Published by Baishideng Publishing Group Inc. All rights reserved.

Core tip: Hair thread tourniquet syndrome is rare and usually affects little children. We present a case of an 18 mo old girl with a strangulated toe. After incision of the hair tourniquet the symptoms soon subsided. The diagnosis is easily made if the clinical features are recognized. However, if the tourniquet is not cut through, the affected body part may become ischemic and even necrotic.

Kuiper JWP, de Korte N. Hair thread tourniquet syndrome in a toe of an 18 mo old girl. *World J Clin Cases* 2015; 3(4): 368-370 Available from: URL: <http://www.wjgnet.com/2307-8960/full/v3/i4/368.htm> DOI: <http://dx.doi.org/10.12998/wjcc.v3.i4.368>

INTRODUCTION

Hair thread tourniquet syndrome (HTTS), or hair tourniquet syndrome, is a syndrome in which children experience strangulation of small extremities (fingers, toes or external genitalia) with a hair or thin wire^[1,2]. If the strangulation is not recognized, the affected body part becomes ischemic, and can even necrotize in a few hours to weeks^[2,3]. In this report, a patient with HTTS of the third toe is presented, for which she was surgically treated.

CASE REPORT

An 18 mo old girl was presented in the emergency ward, after her mother had noticed a constriction



Figure 1 Strangulation of the third toe: Typical clinical picture of hair thread tourniquet syndrome.

around her third toe of the left foot, that morning. She thought this may have had been caused the previous day, when the child's father had removed some hairs from under the toes, after a visit to the swimming pool. The girl was otherwise healthy and did not take any medication. The mother had had a normal partus (C-section), and the girl had afterwards been in the hospital only once, with fever caused by a viral infection.

On physical examination we saw a healthy looking 18 mo old girl, with a strangulation around the third toe of the left foot. No hair or thread could be seen around the toe. Redness and swelling was seen around the strangulation. A normal capillary refill (< 2 s) was seen. Upon palpation, the toe was painful (Figure 1).

An attempt was made to remove (remains of) the strangulating hairs with a stitch cutter, without success. With the idea that possibly all the hairs had already been removed by the father, the patient was sent home, and the mother was advised to return the next day if the strangulation remained.

Indeed, they returned the next day. Physical examination was similar to the previous day, with unchanged strangulation, and still good capillary refill.

It was decided to incise the hair tourniquet in the operating room under general anesthesia. After incision to the bone-medial, between the proximal and distal interphalangeal joint-some hairs were removed.

One day after surgery, the swelling had largely subsided, and the constriction had almost disappeared. After two weeks the girl was seen again, and all symptoms were gone.

DISCUSSION

HTTS is a strangulation of a small limb, usually a finger or toe, or sometimes external genitalia. When the diagnosis is made correctly, treatment is simple and effective. Differential diagnoses may include cellulitis, erysipelas, or other irritation of the skin (for example after being bitten by an insect), or trauma^[3].

Approximately a hundred cases of HTTS are previously

described, mostly occurring for fingers (24%-47%), toes (25%-43%) or penises (44%)^[3]. The typical age of affected children is around 5 years, and fingers are more frequently affected in younger children (up to 1.5 years)^[3]. When a toe is affected, this is usually the third or fourth toe^[2]. The material causing the strangulation is mostly either nylon or hair (both around 50% of the cases)^[2]. However, HTTS in toes is more often caused by hairs^[3].

The etiology of HTTS is, as previously mentioned, a hair or thread around a small body part and causing strangulation and sometimes even ischemia or necrosis. The patient can sometimes shed light on the origin of this hair or thread, but in other cases this remains unclear. How a hair can cause such a strangulation is not entirely clear, but one study mentions that that wet hair is longer than dry hair and thus, when drying, a hair tourniquet contracts and thus causes strangulation^[3]. With this strangulation, swelling occurs, gradually causing a decrease in arterial blood supply and therefore tissue ischemia and necrosis^[2,3].

HTTS diagnosis is easy to make when the clinical picture is recognized. It is however very important that HTTS is not missed, because prolonged HTTS can cause necrosis^[3]. Therefore, it is important to always assess capillary refill in such patients^[3].

Treatment for HTTS is simple: removal of the strangulating hair or thread. This may be difficult with extensive local swelling, and often surgical incision is required. This incision should be to the bone, to be certain that all the constricting material is dissected^[3]. As turned out in this case, after such treatment the symptoms quickly disappear.

COMMENTS

Case characteristics

An 18 mo old girl with a painful swollen third toe was seen at the emergency ward.

Clinical diagnosis

A strangulated third toe was seen, presumably by a hair.

Differential diagnosis

Hair thread tourniquet syndrome is a clinical diagnosis with a very typical representation.

Treatment

Treatment for hair thread tourniquet syndrome consists of incision of the tourniquet.

Related reports

Hair thread tourniquet syndrome usually occurs in little children en generally affects toes, fingers or external genitalia.

Term explanation

Hair thread tourniquet syndrome is abbreviated as hair thread tourniquet syndrome.

Experiences and lessons

Hair thread tourniquet syndrome is a clinical diagnosis and is easily treated when recognized.

Peer-review

This is a nice case and well documented paper about the hair thread tourniquet.

REFERENCES

- 1 **Bannier MA**, Miedema CJ. Hair tourniquet syndrome. *Eur J Pediatr* 2013; **172**: 277 [PMID: 23117472 DOI: 10.1007/s00431-012-1883-5]
- 2 **Klusmann A**, Lenard HG. Tourniquet syndrome--accident or abuse? *Eur J Pediatr* 2004; **163**: 495-498; discussion 499 [PMID: 15179509 DOI: 10.1007/s00431-004-1466-1]
- 3 **Sivathasan N**, Vijayarajan L. Hair-thread tourniquet syndrome: a case report and literature review. *Case Rep Med* 2012; **2012**: 171368 [PMID: 23118759 DOI: 10.1155/2012/171368]

P- Reviewer: Drosos GI, Grimalt R **S- Editor:** Ji FF
L- Editor: A **E- Editor:** Lu YJ





Published by **Baishideng Publishing Group Inc**

8226 Regency Drive, Pleasanton, CA 94588, USA

Telephone: +1-925-223-8242

Fax: +1-925-223-8243

E-mail: bpgoffice@wjgnet.com

Help Desk: <http://www.wjgnet.com/esps/helpdesk.aspx>

<http://www.wjgnet.com>

