

Scalp Rupture-related Acute Hair Matting in a Child: A Case Letter

A 10-year-old girl presented with acute hair matting (AHM) condition at scalp, which was initiated 3 weeks after a scalp rupture due to a blunt trauma. She had no significant past medical history. At the time of presentation, there were no new or exacerbated psychiatric issues.

Trauma was through a car accident and caused scalp rupture in size of about 6cm. The rupture underwent primary repair and was sutured by 0-nylon monofilament and 3 weeks later the stitches were removed successfully. While recovering process, she frequently used Povidone-iodine as an antiseptic for 21 days, three times per day. Also, routinely she used shampoos for dry hair two times per week. No more special substances were used.

Three weeks later, the hair in the ruptured area looked unusual [Figure 1]. On scalp examination, there was a patchy area of compact mass without any abnormal appearance on the scalp except scar line. There were no signs of parasitic infestations. On dermoscopic examination of compact mass, there was an area of broken hair associated with 180° twisted hairs and retained telegenic hairs.

Regarding the clinical appearance and hair examination, a diagnosis of AHM was made. The patient was recommended for haircutting of the affected area, regarding the irreversible nature of the matted hair. Also, Argan oil Repairing Scalpia (Ara Chemi Pars, Tehran, Iran) shampoo was prescribed to her. The shampoo contains non-ionic and amphoteric surfactants, conditioners, Argan, Sweet almond, olive, and avocado oil. The shampoo was Paraben and formaldehyde free. She used the shampoo and cut only the distal part of her hair which was not associated with significant improvement.

AHM also known as Plica Polonica and Plica Neuropathica condition is a rare acquired disorder that presents as a compact uncombable mass of scalp hair due to cuticle damage, similar to “bird’s nest.”^[1-3]

Although the exact etiology of AHM is unclear,^[1] several conditions in association with this presentation have been reported and it seems to be a multifactorial disease. In reported cases, risk factors such as physical factors (e.g., vigorous friction of hair shaft^[4] and rotatory rubbing of hair), chemical ones (e.g., drugs^[5] and harsh shampoos^[3]), behavioral factors (e.g., neglect of hair,^[1] schizophrenia,^[6] and autistic patients^[7]), and infectious condition (e.g., parasitic infestations and pyoderma scalp) have existed.^[8,9]

Friction of hair as a predisposing factor develops electrostatic forces that make viscous lipotropic liquid and crystal phases and possibly cause cuticle injury.^[4] Therefore, the frequent friction of the site of trauma in our case’s hair could be another contributor factor.

Among chemotherapeutic drugs’ side effects, anagen effluvium is induced by systemic abrupt in the mitotic process. It also may cause hair shaft damage and result



Figure 1: Corresponding title: Acute hair matting in a 10-year-old girl

in AHM. Other drugs such as Azathioprine may also correlate to this condition.^[5] In our case, the previous history of any drug usage did not exist.

Usage of harsh cleaners and shampoos such as a cationic surfactant, could damage the cuticle of the hair by breakage on disulfide bonds which leads to matting of hair.^[10] In our case, post-trauma frequent use of povidone-iodine and frequent use of dry shampoo could be the reason in which cuticle got damaged.

It seems poor hair care is an important risk factor for this condition which can explain the frequent reports of an association between this disorder and psychiatric problems.^[6,7,9] Therefore, it has been suggested in such cases with this presentation consider psychiatric problems as possible contributor factors.^[2] In our case, these conditions were checked and were absent.

If we explain the concurrency of scalp rapture and injuries with AHM, because of poor hygiene, inappropriate hair care, intense rubbing of the scalp, and frequent use of povidone-iodine, our case can be considered the first case of scalp rapture who developed AHM following scalp injuries. So that, scalp injuries and povidone-iodine in the post-traumatic phase should be considered as possible risk factors and AHM should be considered as a potential side effect, especially in poor hair care conditions.

Treatment options included cutting the matted hair, completely shaving off the head, overnight application of insecticides such as 1% permethrin lotion for lice infestation, and oral antibiotics to treat bacterial infection. Laser-assisted hair removal for the therapeutic purpose theoretically can be considered for recurrent cases of irregular twisted hair, especially in the localized affected area.^[8,9]

Since the manual separation of the twisted hairs in severe cases is usually unsatisfactory, cutting out the matted hair is mandatory, and other treatment options are insufficient, prevention of hair matting is an important step in the management of AHM.^[8,9] Prevention strategies included using mild cleanser or shampoo, regular use of hair conditioner, gentle hair care including combing, oiling, and drying of the hair, periodic trimming of long hair, and avoiding rotatory rubbing of hair.^[2,9]

Treatment should be focused on both underlying problems and hair condition.^[11] In our case, the treatment recommendation was the Argan oil Repairing Scalpia shampoo and cutting the hair which was not completely done and she was lost their follow-up after 6 months.

Ethical policy and institutional review board statement

Ethics approval for this report was obtained from the Ethics Committee of Isfahan University of Medical Sciences, Isfahan, Iran (IR.ARI.MUI.REC.1400.082).

Data availability statement

The data that support the findings of this study are not publicly available due to containing information that could compromise the privacy of our research participant but are available from our first author as requested.

Financial support and sponsorship

Not applicable.

Conflicts of interest

There are no conflicts of interest.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient's parents have given their consent for their daughter images and other clinical information to be reported in the journal. They understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

**Bahareh Abtahi-Naeini^{1,2}, Fereshte Rastegarnasab³,
Mahsa Pourmahdi-Boroujeni³**

¹Pediatric Dermatology Division, Department of Pediatrics, Imam Hossein Children's Hospital, Isfahan University of Medical Sciences, ²Skin Diseases and Leishmaniasis Research Center, Isfahan University of Medical Sciences, ³Student Research Committee, Isfahan University of Medical Sciences, Isfahan, Iran

Address for correspondence: Dr. Mahsa Pourmahdi-Boroujeni, Student Research Committee, Isfahan University of Medical Sciences, Isfahan, Iran.
E-mail: mahsa.pourmahdi78@gmail.com

REFERENCES

- Monteiro AF, Lencastre A. Whole-scalp cobblestone plica neuropathica with alopecia. *Skin Appendage Disord* 2019;5:390-2.
- Nasirabadi MKK. Plica neuropathica: A case report. *Telangana Journal of Psychiatry* 2016;2:54-5.
- Shah FY, Batool S, Keen A, Shah IH. Plica polonica following use of homeopathic antidandruff shampoo containing cantharin. *Indian Dermatol Online J* 2018;9:71-2.
- De D, Narang T, Kanwar AJ. Frequent combing as a cause of plica neuropathica. *J Eur Acad Dermatol Venereol* 2007;21:1283-4.
- Joshi R, Singh S. Plica neuropathica (plica polonica) following azathioprine-induced pancytopenia. *Int J Trichol* 2010;2:110-2.
- Kumar PN, Rajmohan V. Plica neuropathica (polonica) in schizophrenia. *Indian J Psychiatry* 2012;54:288-9.
- Siragusa M, Giusto S, Ferri R, Centofanti A, Schepis C. Plica neuropathica (matting hair) in an autistic patient. *J Dermatol* 2017;44:e212-3.
- Osorio C, Fernandes K, Guedes J, Aguiar F, Silva Filho N, Lima RB, et al. Plica polonica secondary to seborrheic dermatitis. *J Eur Acad Dermatol Venereol* 2016;30:e134-5.
- Ghodake NB, Singh N, Thappa DM. Plica neuropathica (polonica): Clinical and dermoscopic features. *Indian J Dermatol Venereol Leprol* 2013;79:269.
- Marshall J, Parker C. Felted hair untangled. *J Am Acad Dermatol* 1989;20:688-90.
- Kaur T, Singh D, Malhotra SK, Singh J. Plica polonica after use of shampoo. *Int J Trichology* 2016;8:46-7.

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

How to cite this article: Abtahi-Naeini B, Rastegarnasab F, Pourmahdi-Boroujeni M. Scalp rupture-related acute hair matting in a child: A case letter. *J Cutan Aesthet Surg* 2024;17:81-3.

Access this article online

Quick Response Code:



Website:
www.jcasonline.com

DOI:
10.4103/JCAS.JCAS_139_22