CASE REPORT

Minoxidil induced hypertrichosis in a 2 year-old child [version 1; referees: 2 approved]

Ingrid Herskovitz, Joshua Freedman, Antonella Tosti
University of Miami Hospital South Building, Miami, FL 33136, USA

Abstract
We report a case of a 2 year-old male patient who developed generalized hypertrichosis after 2 months of treatment with 5% minoxidil foam for alopecia areata. This report highlights the danger of prescribing topical minoxidil to young children and the need to correctly instruct caretakers about its administration.

Corresponding author: Ingrid Herskovitz (ingriduzun@gmail.com)

How to cite this article: Herskovitz I, Freedman J and Tosti A. Minoxidil induced hypertrichosis in a 2 year-old child [version 1; referees: 2 approved] F1000Research 2013, 2:226 (doi: 10.12688/f1000research.2-226.v1)

Copyright: © 2013 Herskovitz I et al. This is an open access article distributed under the terms of the Creative Commons Attribution Licence, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. Data associated with the article are available under the terms of the Creative Commons Zero "No rights reserved" data waiver (CC0 1.0 Public domain dedication).

Grant information: The author(s) declared that no grants were involved in supporting this work.

Competing interests: No competing interests were disclosed.

**Case**

Topical minoxidil is widely utilized as an off-label therapy for alopecia areata in adults and children. We report here a case of generalized hypertrichosis in a 2 year old child.

The patient was a 2-year old hispanic boy with no other significant medical history, who was affected by patchy alopecia areata involving 40% of the scalp since the age of 1 year. Three months before the patient came to our clinic he was prescribed 5% minoxidil foam to be applied to affected areas of the scalp twice a day. After two months the parents noticed hair regrowth but also growth of long pigmented hairs on his face, trunk and limbs. The patient’s mother admitted that she had possibly been applying more product than originally instructed.

Clinical examination showed patchy alopecia areata involving 10% of the scalp and generalized hypertrichosis (Figure 1). No other side effects were observed. The patient was referred to a pediatric endocrinologist who excluded underlying endocrinological abnormalities. Minoxidil was discontinued and considerable clinical improvement of the hypertrichosis and the scalp alopecia areata was observed at two month follow up.

**Discussion**

Minoxidil affects hair growth through incompletely understood mechanisms; known effects include increased duration of the anagen growth phase, agonistic affects on adenosine-triphosphate (ATP)-sensitive potassium channels, and prostaglandin stimulation in the dermal papillae. It is clinically indicated as a therapy for androgenetic alopecia, however off-label uses include topical application in alopecia areata in both adults and children.

Systemic administration of minoxidil either by oral administration to the mother during pregnancy or by oral ingestion by the child, has led to rarely reported instances of diffuse hypertrichosis in children and newborns via maternal–fetal transmission.

Hypertrichosis is a common side effect of topical minoxidil treatment in women. Although usually localized to the face, it may occasionally involve limbs and other body areas. To our knowledge there are no reports of generalized hypertrichosis in a pediatric population.

Systemic absorption of the drug is typically minimal with topical therapy, with 1.4% of the applied dose being absorbed. However, hypotheses on the pathogenesis of the diffuse hypertrichosis reaction routinely include systemic absorption, as well as high sensitivity of the follicular apparatus to minoxidil. In our patient, the excessive dose (both in terms of concentration and daily quantity) in combination with the patient’s low body weight favoured systemic adsorption. Further support for systemic effects are noted in the reported cardiovascular side affects in three patients from 10 to 14 years of age treated for alopecia areata with minoxidil 2% topically twice a day. These effects included sinus tachycardia, sensation of palpitation and dizziness.

**Conclusion**

The efficacy of topical minoxidil in alopecia areata has never been definitively proven. The possibility of systemic absorption contraindicates, in our opinion, this treatment in young children, who can develop serious cutaneous or systemic side effects. Furthermore, there are some alternative treatments of alopecia areata in children that are considered safer, for example topical immunotherapy and topical anthraline application.

**Author contributions**

IH made a substantial contribution to the conception and design of the study, acquisition and interpretation of data and the drafting of article. JF made a substantial contribution to the design of the study, interpretation of data and drafting of article. AT made a substantial contribution to the conception and interpretation of data. In addition, they were responsible for revising the article critically for important intellectual content and giving final approval of the version to be published.

**Competing interests**

No competing interests were disclosed.

**Grant information**

The author(s) declared that no grants were involved in supporting this work.
References


Open Peer Review

Current Referee Status: ✔ ✔

Version 1

Referee Report 11 November 2013
doi:10.5256/f1000research.2444.r2221

Johannes Steffen Kern
Department of Dermatology and Venereology, University Medical Center Freiburg, University of Freiburg, Freiburg, Germany

This is a well-written and instructive case report. It emphasizes that minoxidil, which is not a standard first line therapy in alopecia areata, should probably not be used in young children because of possible side effects.

Some comments:
1. Detailed information about the endocrinological work-up performed would be of interest.
2. Were minoxidil levels in the blood of the child assessed?
3. Was there a family history of hypertrichosis?
4. Is there a follow up picture that shows the improvement of the hypertrichosis after discontinuation of minoxidil?

I have read this submission. I believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Competing Interests: No competing interests were disclosed.

Referee Report 05 November 2013
doi:10.5256/f1000research.2444.r2220

Mohamed Badawy Hassan Tawfik Abdel-Naser
Faculty of Medicine, Ain Shams University, Cairo, Egypt

This case report is well written and informative. Here are a few comments:

1. "The patient was referred to a pediatric endocrinologist who excluded underlying endocrinological abnormalities."

- It would be very helpful if a short paragraph about the possible endocrinologic causes and the lab work done by the endocrinologist to exclude them could be added.

2. "Minoxidil was discontinued and considerable clinical improvement of the hypertrichosis and the scalp
*alopecia areata was observed at two month follow up*

- Are there any photographs to demonstrate the improvement of hypertrichosis?

I have read this submission. I believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

**Competing Interests:** No competing interests were disclosed.