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Case Report

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Chronic telogen effluvium: An outcome after ventricular septal defect closure surgery: a rare case report

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ABSTRACT

Telogen effluvium (TE) is the common cause of diffuse nonscarring hair loss. TE is caused by any disruption of hair cycle resulting in increased, synchronized telogen shedding. In children, TE has been reported to be responsible for only a minority of cases with hair loss. The functional mechanism of shedding in majority of these cases is immediate anagen release. A male child of age seven years presented the out-patient department of DVL, RIMS Kadapa, with the history of shedding of hair on head and eyebrows. He is a known congenital heart disease (ventricular septal defect) for which he has undergone ventricular septal defect closure surgery. After a period of six months, shedding of hair on the head and eye brows was noticed. After examining the patient, the dermatologist diagnosed as Telogen effluvium and prescribed Mometasone furoate (synthetic corticosteroid with anti-inflammatory activity), betamethasone, ferrous fumarate (used to treat anaemia not enough red blood cells in the blood) and isotretinoin. Based on the pathogenesis of TE, potential therapeutic options include inhibition of catagen (so as to prolong anagen); induction of anagen in telogen follicles; or inhibition of exogen (to reduce hair shaft shedding). Differentiating TE from other causes of diffuse nonscarring hair loss can indeed be a daunting task. A number of factors have been implicated in the causation of TE, however, clear evidence in their support is lacking. Possible treatment options for TE, especially the chronic form, are not many. Treatment for TE is primarily reassurance and counselling.

Keywords: Anagen, Congenital heart disease, Diffuse nonscarring hair loss, Telogen effluvium, Ventricular septal defect.

INTRODUCTION

Telogen effluvium (TE) is the most common cause of diffuse nonscarring hair loss. Hair loss or alopecia

is a very common complaint and rational, wide-ranging classification system of various causes based on etiopathogenetic principles is still deficient. [1] Diffuse cyclical hair loss (DCHL) was the initial term

used to describe discrete transitory episodes of alterable, diffuse hair shedding. The word TE was first coined by Kligman to describe increased shedding of normal club hairs. The degree of effluvium depends on the severity and duration of exposure, rather than on the type of agent. TE is caused by any disruption of hair cycle resulting in increased, synchronized telogen shedding. [2] ATE can occur in either sex if the proper inciting conditions occur. The effect of age is uncertain, with elderly women more susceptible to acute telogen effluvium (ATE) subsequent high fever, severe hemorrhage, surgical trauma, or immense psychological stress. In children, TE has been reported to be responsible for only a minority of cases with hair loss (2.7%). [3] In humans, synchronous hair growth disappears in childhood. A usual normal scalp has 100,000 hairs, with approximately 86% being in anagen, 1% in catagen, and 13% in telogen. With TE, the ratio changes to 70% anagen and 30% telogen, with regular shedding of up to 300 hairs. [4, 5] Conversely, it must be kept in mind that the degree of disability due to hair loss varies widely from patient to patient and does not always accord with the objective assessment of hair shedding.[6] The causal mechanisms for this common endpoint of telogen shedding may be entirely different in different cases. The functional mechanism of shedding in majority of these cases is immediate anagen release. [7] TG (ATE seen 2-5 months after childbirth) is a distinctive form allied with pregnancy and childbirth. [8, 9]

Acute telogen effluvium

- High fever
- Surgery[10]
- Hospitalization
- Hemorrhage[11]
- emotional stress[12]
- Changes in medication
- Postpartum (TG)
- Heavy metals: Arsenic,[13] thallium,[14] and selenium[15]

ATE usually remits within few months in 95% of cases. A small proportion of TG cases may experience persistent, episodic shedding as some follicles may not revert to an asynchronous growth pattern. [16]

Chronic telogen effluvium

CTE is a primary, idiopathic condition affecting middle-aged women, which needs to be differentiated from CDTHL secondary to organic causes and AGA. It presents as TE lasting more than 6 months, without

any widening of central part or follicular miniaturization.[17] The disorder appears to be distinct from ATE because of its prolonged, fluctuating course.[18] Although, some cases of CTE may follow ATE with a known trigger, in most cases a specific trigger cannot be identified.[19] Clinical features include an insidious onset and a fluctuating course lasting for several years.

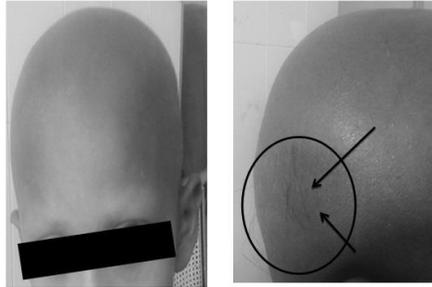
Chronic diffuse telogen hair loss

CDTHL refers to telogen hair shedding, longer than 6 months, secondary to a variety of organic causes. Prominent ones include thyroid disorders, profound iron deficiency anemia (IDA), acrodermatitis enteropathica, and malnutrition.[20] Although many drugs have been implicated in causing TE there are no controlled studies examining possible causal relationship.[21] Drugs can induce hair loss by inducing an abrupt cessation of mitotic activity (anagen effluvium) or by precipitating follicles into premature rest (TE).[22] Although hair loss seems to be a daunting disorder to evaluate, breaking down the history, examination, and discussion into digestible parts makes the experience easy. [23] Treatment for TE is primarily reassurance and counselling. If attempts at identifying a specific cause have been fruitful, one should correct them. An expectant management and observation are usually appropriate as shedding is expected to cease within 3-6 months and thereafter recovery should be complete. [24, 25] This rare case report explains about telogen effluvium (TE), which was observed after ventricular septal defect closure surgery at the age of 9 months/3 days.

CASE STUDY

A male child of age seven years presented the out-patient department of DVL, RIMS Kadapa, with the history of shedding of hair on head and eyebrows. He is a known history of poor weight gain and frequent upper respiratory tract infections. He is a known congenital heart disease (ventricular septal defect) for which he has undergone ventricular septal defect closure surgery. The diagnosis and surgical procedure was shown in figure-1. Patient was ventilated in ICU post-operatively and treated with analgesics, antibiotics and diuretics. Patient general condition was stable and discharged with the following medication shown in figure-2. After a period of six months, shedding of hair on the head and eye brows was observed in figure-3. After examining the patient, the dermatologist diagnosed as Telogen effluvium and prescribed with the following medication:

1. Tecum lotion 0.1% 10 ml
2. Salisone lotion 20 ml
3. Trichoton syrup 150 ml
4. Tab. B-complex OD
5. Tab. Multivitamin OD
6. Cap. A & D OD
7. Tab. Neotrex 2.5 mg (weekly 1 tab./4 weeks)
8. Tab. folirte 5 mg ½ tab. daily (should not administered while taking neotrex).



DISCUSSION

TE is caused by any disruption of hair cycle resulting in increased, synchronized telogen shedding. TE has been reported to be responsible for only a minority of cases with hair loss. The degree of disability due to hair loss varies widely from patient to patient and does not always accord with the objective assessment of hair shedding. The functional mechanism of shedding in majority of these cases is immediate anagen release. TG (ATE seen 2-5 months after childbirth) is a distinctive form associated with pregnancy and childbirth. [26] ATE usually remits within few months in 95% of cases. Some cases of CTE may follow ATE with a known trigger, in most cases a specific trigger cannot be identified.[27] Although many drugs have been implicated in causing TE there are no controlled studies examining possible causal relationship. Drugs can induce hair loss by inducing an abrupt cessation of mitotic activity (anagen effluvium).

Anticoagulants (blood thinners), including

- Warfarin sodium
- Heparin injections

Cholesterol lowering drugs, including

- Clofibrate
- Gemfibrozil

Anticonvulsants

Antidepressant drugs, including

- Clomipramine
- Amitriptyline
- Desipramine
- Nortriptyline

Diet/weight

Loss: Amphetamines

Heart/high blood pressure

Many drugs prescribed for the heart, including the beta-blockers, which are also used to treat high blood pressure, and include:

- Atenolol
- Metoprolol
- Nadolol

Based on the pathogenesis of TE, potential therapeutic options include inhibition of catagen (so as to prolong anagen); induction of anagen in telogen follicles; or inhibition of exogen (to reduce hair shaft shedding). Treatment for TE is primarily reassurance and counseling. Tecum lotion contains mometasone furoate for dermatologic use. Mometasone furoate is a synthetic corticosteroid with anti-inflammatory activity. The mechanism of the anti-inflammatory activity of the topical steroids, in general, is unclear. Apply a few drops of lotion to the affected skin areas once daily and massage lightly. Salisone lotion contains betamethasone used in various dermatological disorders. Apply a few drops to the affected area of the skin two times per day (morning and evening). Trichoton syrup contains ferrous fumarate is used to treat anaemia not enough red blood cells in the blood. It is an iron containing drug and is sometimes known as an oral iron salt. It is used to treat anaemia caused by a deficiency of iron. Tab. Neotrex contains isotretinoin. It induces apoptosis (cell death) in various cells in the body. Tab. folirte 5 mg ½ tab. daily (should not administered while taking neotrex).

CONCLUSION

Differentiating TE from other causes of diffuse nonscarring hair loss can indeed be a daunting task. A

number of factors have been implicated in the causation of TE, however, clear evidence in their support is lacking. Possible treatment options for TE, especially the chronic form, are not many. The outcomes have improved as we have gained more knowledge about the factors that control hair follicle cycling.

Abbreviations

ATE- Acute telogen effluvium; CTE- Chronic telogen effluvium; DVL- Dermatology, venereology

and Leprology; DCHL- Diffuse cyclical hair los; IDA- iron deficiency anemia

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Conflict of interest

The authors have no conflicts of interest to disclose.

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