

CASE REPORT

Acquired Localized Hypertrichosis Induced by Internal Fixation and Plaster Cast Application

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Hypertrichosis refers to increased vellus hair growth and is independent to androgen excess. The acquired localized hypertrichosis (ALH) is one of the typical hypertrichosis, which mainly results from chronic irritation, inflammation, friction, and occlusion by plaster of Paris. Here, we report a young boy who had ALH on his right hand following a closed fracture with internal fixation and plaster cast application. The case is unusual because the hairy area is limited to the operative region of internal fixation. We suggest that the local vascular changes and skin inflammation induced by internal fixation and plaster cast application may be associated with ALH. (*Ann Dermatol* 25(3) 365 ~ 367, 2013)

-Keywords-

Casts, Hyperemia, Hypertrichosis, Internal fixators, Localized, Surgical

INTRODUCTION

Hair growth is a regular and complex process. Any factor such as environmental or internal stimuli can affect nutrition and metabolism of hair growth. Specifically, hair growth in any place that is coarser, longer, or more pro-

fuse than the normal standard according to age, sex and race, is regarded as excessive. In condition of disorders, excessive or abnormal hair growth is referred to as hypertrichosis or hirsutism^{1,2}. The acquired localized hypertrichosis (ALH) refers to excessive vellus hairs with no androgen-induced hair growth in a localized body area. The ALH may lead to chronic irritation, skin inflammation, friction and trauma³⁻⁵. Hypertrichosis of one leg or forearm after a prolonged period of occlusion by plaster of Paris is a phenomenon well known to orthopedic surgeons but uncommon among dermatologists. Herein, we report a 15-year-old boy who had ALH following a closed fracture with internal fixation and plaster cast application. The case is unusual because the hairy area is merely limited to the plaster cast covered area near the operative region, instead of the entire plaster cast applied area. We suggest that the local vascular changes and skin inflammation induced by internal fixation and plaster cast application may be associated with ALH.

CASE REPORT

A 15-year-old boy was observed with some new excessive hairs on the right back of his hand for 3 weeks. Three months prior to this, he had been diagnosed with a closed fracture in the first metacarpus of right hand after a fall on the cement floor. He was operated with internal fixation by Kirschner wire on his right first metacarpus (Fig. 1A). After the operation, a plaster of gypsum cast was applied from the wrist to his right elbow (Fig. 1B). Six weeks later after the cast was removed, increased hair growth was localized on the right back hand where the cast was covered for internal fixation. Physical examination indicated a sheeted, coarse, dark hair area on his right back hand with a postsurgical scar which is approximate 5 cm in length (Fig. 1C). There was no history of any sys-

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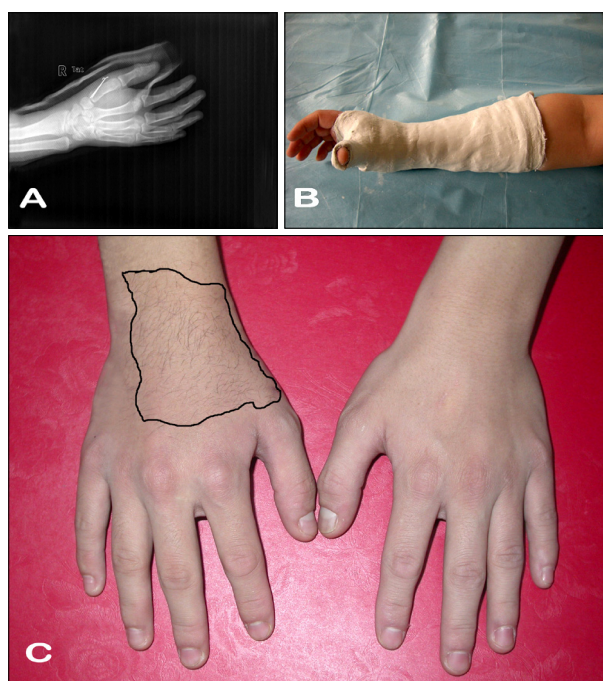


Fig. 1. (A) X-ray examination showed that the fractured first metacarpus of right hand was fixed by Kirschner wires. (B) The plaster cast was covered from the wrist to the elbow. (C) Localized hypertrichosis on the right back hand (circle line indicated) after prolonged internal fixation and cast application.

temic or topical medications known to cause hypertrichosis administered either before or after the surgery. The abnormal hair growth resolved spontaneously 4 months after the cast removal.

DISCUSSION

Hypertrichosis is a rare condition characterized by excessive growth of hair in areas of the body that are not predominantly androgen dependent, and it is independent of age, race or sex¹. It may be either generalized or localized. The ALH may be associated with chronic irritation, inflammation and friction. It had been reported that ALH might result from tattoos, sclerotherapy, and subsiding psoriasis respectively⁶⁻⁸. It can also be presented an irregular pattern on the legs in chronic venous insufficiency⁹, around the edges of a burn¹⁰, at the site of multiple clusters of excoriated insect bites¹¹, and in the leg after radical inguinal lymphadenectomy¹².

ALH of one leg or forearm after a prolonged period of occlusion by plaster cast had been reported in the orthopedics Journal but seldom in dermatology. In 1980, Pick¹³ first described a case of ALH in a 12-year-old boy who developed an effusion of the right knee following a fall. Since then, many surgeons had reported the phenomenon

after a long period of occlusion by plaster cast^{2,4,5,14,15}. In the above cases, ALH was presented on the areas where plaster cast had been applied. However, the pathogenesis of post-cast ALH after fracture is not currently clear. Some authors believed that increased blood supplies or excessive hyperemia at the affected site would provide an abundance of oxygen and nutrients, and prolong the anagen^{2,3,14,15}. ALH is associated with 55% of the reflex sympathetic dystrophy cases and may be accompanied by Beau's lines¹⁶. Thus, reflex sympathetic stimulation of inflammation and immobilization following the fracture may also induce vasodilatation on the affected area and stimulate hair growth¹⁶.

Our case is unusual because the hairy area is just limited to the right back hand where the plaster cast and internal fixation surgery was performed instead of the whole cast applied area. The specific etiology of hypertrichosis in our patient remains unclear. We believe that two causes may explain the phenomenon. The first is internal fixation may affect a regional blood supply that lead to excessive hyperemia in fractured area. The second is the prolonged cast application which provided an 'occlusive, warm and pressed' local environment, and the internal fixation surgery, which induced more regional inflammation and edema, made the local environment beneath the cast more suitable to hair growth. Nevertheless, we found no evidences of reflex sympathetic stimulation or dystrophy such as hyperesthesia, excessive pains or malnutrition of skin in this case. Thus, the possibility of reflex sympathetic dystrophy is denied. We suggest that the local vascular changes and skin inflammation induced by internal fixation surgery and plaster cast application may be associated with ALH.

All physicians should be aware of the benign and transient nature of post-cast ALH which may be related to cast immobilization under any conditions. Due to such transient natures, further investigations are definitely not indicated.

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