Dermatology Practical & Conceptual

Facial Bier Spots Unresponsive to Botulinum Toxin: A Case Series

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Introduction

Bier spots are asymptomatic, irregular anemic macules in a blanchable erythematous background. However, the pathogenesis is not clear yet; abnormal vasoconstriction of vessels has been suggested as the primary mechanism [1]. Lesions often involve extremities and the trunk; only one case with facial involvement has been reported previously [2]. Lesions do not require specific treatment, but patients may experience cosmetic problems [3].

Herein, we described 3 cases with Bier spots on the face with accompanying tension-type headaches in all patients and tested the hypothesis that botulinum toxin might improve facial Bier spots.

Case Presentation

A 45-year-old male patient (Patient 1) was admitted to our outpatient dermatology clinic with a complaint of pale, whitish macules on the forehead. The complaints had started six months ago after trauma and become more visible with emotional stress and bending down. He also suffered from headaches and forehead wrinkles. A diagnosis of Bier spots was made upon clinical examination. Laboratory evaluations and imaging methods revealed no abnormalities. A total of 150 Speywood units (reconstituted with 2.5 ml normal saline) of botulinum toxin (AbobotulinumtoxinA, Dysport®, Ipsen, 500 units) were injected to forehead lines considering the localization of Bier spots (Figure 1). In addition to cosmetic improvement of the frontal wrinkles within one week, headache severity regressed from 10 to 5 points according to the visual analog scale (VAS) for pain. Unfortunately, there was no response in Bier spots six weeks after botulinum toxin injection.

The symptoms of a 48-year-old male patient (Patient 2) started one year ago on the trunk and face without any triggering (Figure 2). A 32-year-old female patient (Patient 3) had experienced similar complaints on the forehead six months after her first vaginal delivery. Strikingly, both were accompanied by tension-type headaches. Laboratory evaluations and imaging methods of both patients did not reveal any abnormality.

Figure 1. Case 1. (A) Pretreatment. Bier spots were marked with black color to orient the injector. The hypopigmented macule highlighted with a red arrow was selected as a control area, and no injection was performed. (B) Post-treatment. Significant improvement was recorded in forehead lines at week 1, while there was no improvement in Bier spots.

Figure 2. Case 2. The patient provoked these lesions by holding his breath for about a half minute and bending down just before the photographs.

Botulinum toxin injections were performed to Bier spots on the forehead of the patient 2, similar to Patient 1. While no improvement was observed in Bier spots at the end of the 6th week, the headache severity regressed from 10 to 2 points after one week according to the VAS score. Patient three recommended no treatment due to breastfeeding.

Conclusions

Recently, botulinum toxin in non-cosmetic medical conditions, including tension-type headaches, is becoming increasingly popular. Considering its effects on the cutaneous vasculature [4-6], we aimed to test the hypothesis that botulinum toxin might relax the muscles around the small arterioles and increase transcutaneous blood flow, thereby reducing hypoxia and improving Bier spots. Possible common pathogenesis for the coexistence of both diseases appears to be genetic and triggering factors for an exaggerated vasoconstrictive response [1,6]. However, while tension-type headaches in both patients improved, Bier spots did not. Therefore, failure to botulinum toxin may be related to insufficient dosage or other unknown factors that play a role more critical than the exaggerated vasoconstrictive response.

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