Improvement of Fox-Fordyce disease with botulinum toxin type A

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Abstract

Fox-Fordyce disease is a rare, chronic, pruritic papular eruption affecting apocrine gland-rich areas, predominantly in premenopausal women. There is no standardized treatment for Fox-Fordyce disease and various therapies have yielded mixed results. Botulinum toxin type A injections have shown promise in at least three refractory cases reported in literature. We present an additional case of Fox-Fordyce disease that improved after a single treatment with Botulinum toxin type A.

Keywords: Fox-Fordyce disease, botulinum toxin

Introduction

Primary Fox-Fordyce disease (FFD) was first described in 1902 by Fox and Fordyce in two patients with axillary disease [1]. FFD is a rare, chronic, pruritic papular eruption involving apocrine gland-rich areas, most commonly affecting young adult women [1,2]. Therapeutic knowledge of FFD is derived primarily from case reports, and no single agent has proven particularly effective [1]. An evidence-based approach to management has yet to be established [2].

Case Synopsis

A 36-year-old premenopausal woman presented with a four-year history of a mildly itchy, papular eruption in both axillae. She had no significant medical history and denied previous laser hair removal or use of topical products or fragrances. Physical examination revealed multiple firm, nontender, skin-colored follicular papules in the bilateral axilla (**Figure 1**). Axillary hair density was sparse. A punch biopsy showed dilated hair follicles filled with lamellated keratin, spongiosis, and a superficial perivascular lymphocytic inflammatory infiltrate with a few foamy histiocytes (**Figure 2**), confirming a diagnosis of Fox-Fordyce disease (FFD).

Treatment with methylprednisolone aceponate 1mg/g ointment, tretinoin 0.5mg/g ointment, and clindamycin 1% gel yielded no improvement after three months. Owing to concurrent complaints of hyperhidrosis, she received one session of intradermal injection of 75U botulinum toxin type A (BTX-A, Botox®, Allergan, Inc) into each axilla. The injection points were marked 1.5-2.0cm apart, and 2.5U were injected at each site using a dilution of 5 U/0.1 ml with normal saline.

At a three-month follow-up, the patient reported a significant reduction in sweating and complete resolution of pruritus. In addition, there was a reduction in the number of papules from the

baseline (**Figure 3**). There were no reported adverse events after the injections.

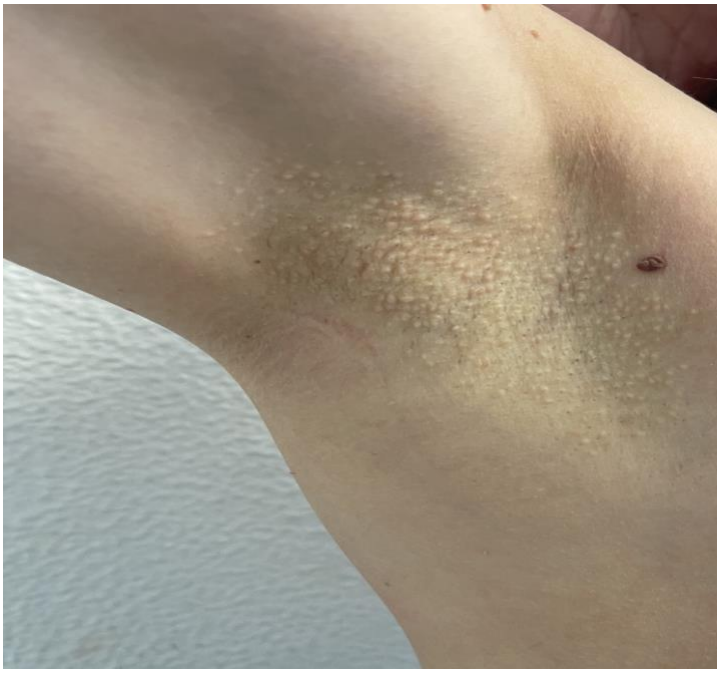

Figure 1. *Clinical presentation: Multiple skin-colored follicular papules in the axilla.*

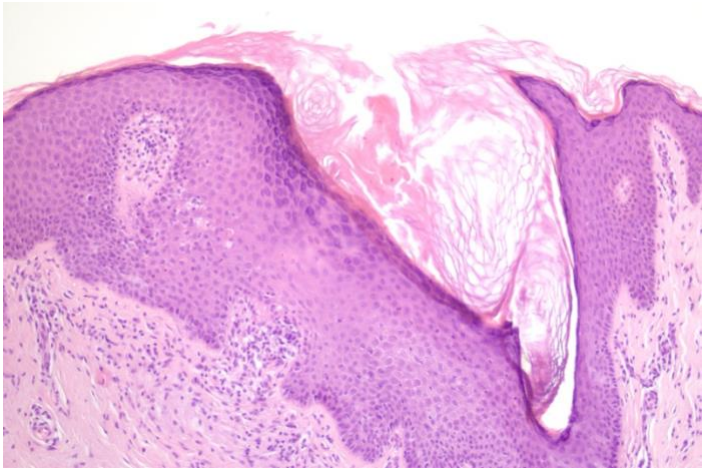

Figure 2. *Histopathological presentation: dilated follicular infundibulum with keratin plugging along with spongiosis and a superficial mononuclear inflammatory infiltrate (Hematoxylin and eosin staining x100).*

Case Discussion

FFD is a rare, chronic condition characterized by the appearance of symmetric, often itchy, skin-colored papules centered around hair follicles in areas with apocrine glands, such as the axillary, anogenital, or periareolar skin [3,4]. The diagnosis is based on both clinical and histopathological features [5]. Histopathology is characterized by focal spongiosis in the upper infundibulum with perifollicular fibrosis and lymphohistiocytic infiltrate [6].

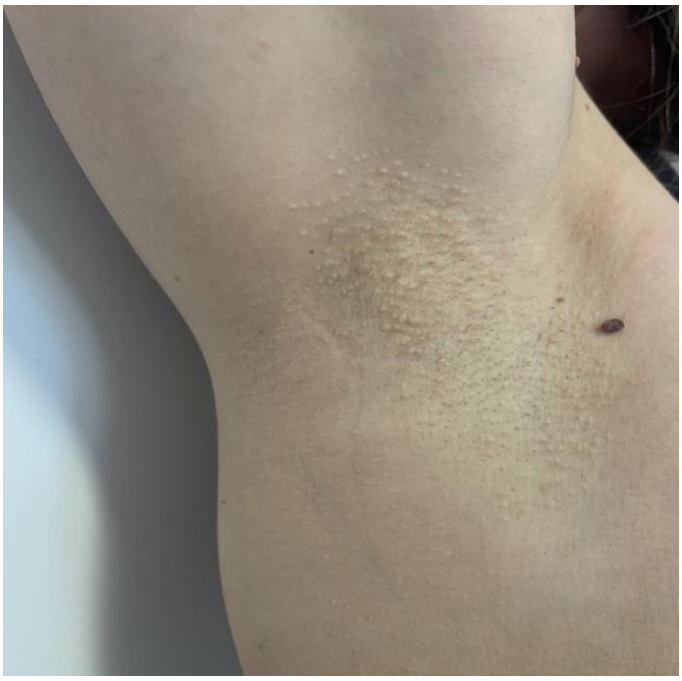

Figure 3. *Physical examination three-months after a single botulinum toxin type A treatment: decreased lesions from the baseline in the axilla.*

FFD is caused by keratin plugging of the follicular infundibulum at the distal portion of the apocrine sweat duct and less often by plugging of apoeccrine ducts. Keratotic obstruction leads to destruction of the duct and secretory portions of apocrine sweat glands, causing a downstream inflammatory response in which lymphocytes and histiocytes are recruited to the site of injury [7]. Although the exact cause remains unclear, evidence suggests a hormonal influence, given its predilection for women aged 15 to 35; symptoms sometimes resolve after menopause Clique ou toque aqui para introduzir texto.[2,3]. Cases of FFD after laser hair removal have also been described [8].

FFD needs to be differentiated from lichen amyloidosis, Darier disease, syringoma, lichen simplex chronicus, and spongiotic dermatitis, either clinically or pathologically. The presence of focal spongiosis in the upper infundibulum associated with a perifollicular lymphohistiocytic infiltrate can facilitate the diagnosis of FFD [6].

There is no standardized treatment for FFD. Therapeutic knowledge of FFD is derived from case reports, but no large case series have been carried out. Treatment modalities with varying success rates include topical corticosteroids, calcineurin inhibitors, tretinoin, clindamycin, oral contraceptives, isotretinoin, laser therapy, surgical excision, and phototherapy [2,4,5]. Clique ou toque aqui para introduzir texto.Clique ou toque aqui para introduzir texto.Clique ou toque aqui para introduzir texto.

BTX-A injections have shown promise in refractory cases [1,4,5]. Clinical evidence has revealed the antipruritic effect of BTX-A in conditions like lichen simplex, notalgia paresthetica, or brachioradial pruritus. Although the reasons are not yet fully understood, it is known that BTX-A inhibits the release of acetylcholine as well as substance P and glutamate, which may be associated with itchiness [5].

The application of BTX-A injections in our patient resulted in the disappearance of pruritus and a partial clinical response after a single treatment. The improvement of pruritus may be explained by sweat reduction which is a known trigger of pruritus in FFD [1], as well as by the direct BTX-A effect on itch [4]. The exact mechanisms leading to the clinical reduction of skin lesions are unknown. Further research is needed to elucidate its precise mechanisms in FFD management, but our case further suggests that BTX-A injections should be considered in patients with recalcitrant FFD.

Conclusion

This case emphasizes that treatment with intradermal BTX-A injections may represent a promising therapeutic option for refractory FFD. Future efficacy studies with larger sample sizes and longitudinal follow-up should be conducted to investigate this treatment modality for FFD.

Potential conflicts of interest

The authors declare no conflicts of interest.

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