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### Treatment of inguinal hyperhidrosis with botulinum toxin type A

A 40-year-old Caucasian female presented to the clinic with a history of hyperhidrosis of the palms and axillae which were effectively treated with injections of botulinum toxin type A (BOTOX). She wondered whether the same treatment would work for her embarrassing hyperhidrosis of the inguinal folds. Despite the paucity of data on treating this region, she was treated with 50 U per side, and within 10 days reported complete relief of her symptoms.

A 40-year-old Caucasian female presented to our clinic with a long-standing history of palmar and axillary hyperhidrosis. We had been successfully treating her every 9-12 months for this condition and she reported great success and happiness with the botulinum toxin injections. At our most recent visit, the patient wondered whether this treatment might be effective for her embarrassing inguinal hyperhidrosis which she had also suffered with for many years. Seeing no theoretical or practical reason for why this treatment wouldn't work, we agreed to inject each inguinal areas following a starch-iodine test to delineate the affected area.<sup>1</sup>

We injected, without local anesthetic, 50 U of BOTOX into each inguinal area based on the positive starch-iodine test's localization of sweating activity. Injections were spaced approximately 1-2 cm apart, using a 30 G needle. The treatment was

tolerated with no complaint of pain or discomfort, deemed similar to her experience with axillary hyperhidrosis.<sup>2</sup>

This patient returned 2 weeks later for follow-up.<sup>3</sup> She was very pleased with the results, and reported complete resolution of her inguinal hyperhidrosis. She is greatly relieved, and we will follow-up with her in the future to see the duration of benefit.

### Discussion

Hyperhidrosis is a psychosocially embarrassing condition that historically had treatment options of varied success, including: topical application of antiperspirants with aluminum salts (e.g. Drysol®), oral anticholinergics, iontophoresis, and endoscopic transthoracic sympathectomy.<sup>1</sup> The use of botulinum



**Figure 1** Inguinal starch-iodine test prior to treatment



**Figure 2** Inguinal starch-iodine test prior to treatment, close-up view



**Figure 3** Inguinal starch-iodine test two weeks following treatment

toxin type A (BOTOX) in humans for hyperhidrosis only came about since 1996.<sup>2,3</sup>

Botulinum toxin is a safe and effective treatment for hyperhidrosis, and has been shown to improve the quality of life in affected patients.<sup>4</sup> The toxin works by inhibiting the release of acetylcholine at the neuromuscular junction, and affecting the postganglionic sympathetic innervation of sweat glands.<sup>5</sup>

Axillary and palmar hyperhidrosis have thus far been the most studied affected areas with regards to the beneficial effects of botulinum toxin type A (BOTOX). Using a PubMed search, only one reference was found with mention to the use of botulinum toxin for inguinal or groin hyperhidrosis. Goldman reports his personal experience with the use of botulinum

toxin for several areas, and experience with inguinal hyperhidrosis in two patients.<sup>6</sup>

Our case report of the use of botulinum toxin for inguinal hyperhidrosis corroborates the findings of Goldman. More work should be done in this area to find the optimal dose for treating this area, and patients should be made aware that this is another area of the body that can benefit from botulinum toxin therapy.

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#### Oral lichen planus: clinical and histological evaluation in an open trial using a low molecular weight heparinoid (sulodexide)

Lichen planus (LP) is a relatively common disorder affecting stratified squamous epithelia, often in multiple sites.<sup>1,2</sup> Although often presenting as symptomless white lesions, oral lichen planus (OLP) may be painful – especially in the atrophic and erosive forms or where there is desquamative gingivitis.<sup>2</sup> In contrast to cutaneous LP, the oral disease tends to be chronic.<sup>2–4</sup> Therefore, in some of LP patients, systemic therapy is indicated.

Therapy of OLP includes mainly the use of various immunosuppressive agents, especially corticosteroids,<sup>2,5,6</sup> or more recently, tacrolimus;<sup>7,8</sup> but the adverse effects of several of the immunosuppressive agents used systemically, especially in elderly patients, means that safer alternatives are sought.

The aim of this study was to determine the clinical effectiveness of a new low molecular weight heparinoid molecule (sulodexide) used systemically, but which has immunosuppressive activity with minimal adverse effects.

Twenty Italian patients with chronic erosive or reticular-erosive oral lichen planus (LP) (13 female and 7 males, age range 38–74 years; median 59 years) were studied (Fig. 1). Informed consent and approval of the local district ethical committee was obtained.

All patients were submitted to oral lesional biopsy and had LP confirmed in accordance with World Health Organization (WHO) parameters and all had positive immunostaining for fibrinogen along the epithelial basal membrane zone. Four of the patients had LP affecting skin but none had LP in other sites. All had normal blood count, PT, PTT, fibrinogen, and blood glucose levels. Of the 20 LP patients, six had active viral

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