Muscle Weakness in Treatment of Palmar Hyperhidrosis With Botulinum Toxin Type A: Can It Be Prevented?

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Background: Palmar hyperhidrosis is a chronic disorder, resistant to conventional treatment. Clinical studies suggest the effectiveness of botulinum toxin A in the treatment of primary palmar hyperhidrosis.
Objective: To evaluate the efficacy of botulinum toxin A in the therapy of palmar hyperhidrosis and the frequency of incurred muscle weakness.
Materials and Methods: Four hundred seventy-four patients with palmar hyperhidrosis were enrolled in the study. The Hyperhidrosis Disease Severity Scale (HDSS) and the Minor-iodine starch test were chosen to assess the disease severity. In addition, a physician's global assessment scale was used to evaluate the effectiveness of the treatment with BTX-A.
Results: There were 312 females and 162 males aged 19-48 (mean 29 years). The improvement following the injection at two weeks and at one, three, six and nine months, as evaluated by physicians, was 82%, 83%, 74%, 48% and 28%, respectively. Two hundred and seventy five patients reported local pain and muscle weakness occurred in 102 patients.
Conclusions: BTX-A led to the reduction of disease severity while transient side effects were reported.

Palmar hyperhidrosis is a pathological condition in which excessive sweat secretion is produced by the eccrine sweat glands in the palms. Although several studies have documented the long-term efficacy of botulimun toxin type A (BTX-A) treatment in palmar hyperhidrosis,[1-4] there is a lack of large series recording the adverse events and particularly muscle weakness. The aim of this study is to evaluate the response to BTX-A in the treatment of palmar hyperhidrosis, frequency of incurred muscle weakness (MW) and duration, and to explore pathogenic factors implicated in this side effect.

Methods

Consecutive patients with moderate to severe focal palmar hyperhidrosis attending the outpatient clinics of "Andreas Sygros" Hospital in Athens, Greece from January 2012 to December 2013 were recruited. The Ethics Committee of the "Andreas Sygros" Hospital approved the study protocol. A signed informed consent was obtained from all patients. They had a complete evaluation and clinical assessment of the hyperhidrotic area with the Minor-iodine starch test. The Hyperhidrosis Disease Severity Scale (HDSS) was chosen to evaluate the disease severity. It is a single –item 4-point scale on which the patients rate the tolerability of their hyperhidrosis symptoms and the degree of interference with their activities that those symptoms are associated with. A score of 3 or 4 indicate severe hyperhidrosis, and a score of 1 or 2 indicate moderate hyperhidrosis.[5] The hyperhidrotic areas were marked using a demographic pen and each area was then subdivided into squares 2x2 cm. A volume of 2.5U was injected at each injection site. A dose of 75U-100U of botulinum toxin type A (BOTOX; Allergan Inc, Irvine, CA) per palm was injected intradermally into each area, according to the hand size. Patients were evaluated every two weeks during the first month and subsequently at three, six and nine months. A physician´s global assessment scale was used to evaluate the efficacy of the treatment with BTX-A (0-25% indicated poor response, 25%-50% fair, 50%-75% good, and 75%-100% excellent response).

Results

A total of 474 patients with palmar hyperhidrosis were entered in the study. There were 312 females and 162 males, aged 19-48 (mean 29 years). The improvement following the injection, at two weeks and at one, three, six and nine months, as evaluated by physicians, was 82%, 83%, 74%, 48%, and 28%, respectively. The severity of hyperhidrosis was remarkable improved after treatment with BTX-A (Table1). As far as concerns the side effects of the treatment, local pain was reported by 275 patients (185 females, 90 males) and MW occurred in 102 patients (65 females, 37 males). Muscle weakness lasted 2-5 weeks (median 2,5 weeks) with female patients reporting a period of MW lasting three weeks as opposed to two weeks among male patients.

Discussion

In this series, BTX-A proved to be an effective method for treating palmar hyperhidrosis, with MW being the second most frequent side effect to be reported with in the first week of injection. Hypothetical causes of MW could include idiosyncratic reactions, genetic predisposition, age, gender, and diffusion of the drug in the underlying muscles. Even though the occurrence of MW does not appear to be gender-related, in our study, women experienced MW twice more frequently than men. Therefore, we assume that anatomical differences

TABLE 1.

Comparison of Severity of Hyperhidrosis at Baseline and After 15 Days,1,3,6, and 9 Months Treatment With BTX-A in Patients With Palmar Hyperhidrosis

Hyperhidrosis Disease Severity Scale(HDSS)	Before Treatment With BTX-A [n(%)]	After 15 Days Treatment With BTX-A [n(%)]	After 1 Month Treatment With BTX-A [n(%)]	After 3 Treatment With BTX-A [n(%)]	After 6 Treatment With BTX-A [n(%)]	After 9 Months Treatment With BTX-A [n(%)]
1	0	45 (9.5%)	98 (20.7%)	291 (61.3%)	368 (77.6%)	345 (72.8%)
2	96 (20.3%)	298 (62.8%)	302 (63.7)	162 (34.2%)	106 (22.4%)	94 (19.8%)
3	258 (54.4%)	101 (21.4%)	74 (15.6%)	21 (4.5%)	0	31 (6.6%)
4	120 (25.3%)	30 (6.3%)	0	0	0	4 (0.8%)

of the palms between sexes associated with diverse occupational conditions or hobbies could probably contribute to the development of MW. Muscle weakness was observed in muscles close to the injection site. This indicated that the spread of BTX-A impaired neuromuscular transmission in the intrinsic muscles of the hand, but it did not affect proximal forearm muscles used for handgrip movements.

Our study shows that 75U-100U per palm of BTX-A injected intradermally drastically reduced sweat secretions in patients with hyperhidrosis. In order to decrease the possible complications, we suggest that the physicians should be well trained in the subcutaneous or intradermal injection technique and different foci of hyperhidrosis should be treated in separate sessions. In addition, we recommend that low dosages of BTX-A be used per injection site and that the number of sites to be injected be determined according to hand size.

Conclusion

BTX-A remains a reliable therapeutic method for focal palmar hyperhidrosis. Local side effects such as MW do not seem to be a restrictive factor, probably due to their mild and transient nature.

Disclosure

The authors have no conflicts of interest to declare.

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