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Treatment of gustatory sweating with botulinum toxin: A prospective study on long-term efficiacy and quality of life

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Introduction

Frey's syndrome is a localized hyperhidrosis in the facial skin associated with eating or smelling food. It is present in almost all patients after parotid gland surgery [7, 10]. First mentioned by Duphenix (Duphenix 1757) the phenomenom was studied and described by Lucie Frey in 1923 [5]. The symptoms are dripping sweat frequently combined with erythema, local hyperthermia and swelling sensations in the preauricular and temporal region. The pathogenesis of gustatory sweating is not clear yet. It is considered to occur due to aberrant regrowth of postganglionic parasympathetic fibers from the otic ganglion to the sweat glands of the overlying skin after parotidectomy thus causing sweating on gustatory stimulation. Because severe gustatory sweating decreases quality of life there is a strong demand for treatment [6]. Injections of botulinum toxin A (BTX) into the affected skin have recently been described to be an effective and safe treatment [2, 3, 4, 8, 9, 6]. Naumann recommended BTX to be the treatment of choice in gustatory sweating [11]. However, recent data suggest that there is only temporary effectiveness of the intracutaneous injection of the toxin. This prospective clinical study was therefore designed to evaluate the long-term efficacy of BTX for treatment of Frey's syndrome both in terms of functional outcome and health related quality of life.

Method

Under permission of the local ethic-commission [Nr. 2157: Qualitative Begleituntersuchung bei intrakutaner Injektion von BTX zur Behandlung des gustatorischen Schwitzens nach operativer Entfernung der Ohrspeicheldrüse 8/99] 17 patients with gustatory sweating were included. All patients had undergone a lateral parotidectomy due to a benign tumor of the parotid gland. Minor's starch iodine test was used as an objective measure to detect gustatory sweating [11]. The severety of the disease was quantified by morphometry using a digital camera with subsequent image analysis (CCD camera: (Olympus Camedia 1400)). The image was transfered to a computer (Macintosh G3, Apple Cupertino, CA/USA) and the affected area was calculated with NIH-Image1.61 freeware software. Lyophilized BTX (Botox®, Merz & Co., Frankfurt/Germany) was reconstituted to a final solution of 10 IU/ml. To achieve a uniform effect a grid template was used to devide the affected skin area into fields of $1cm^2$. BTX was injected intracutaneously once at a dosage of 1 IU (mouseunits) BTX (0.1 ml) per $1cm^2$. Minor's test was performed one week after treatment to prove the efficacy of treatment. The evaluation of effectivness and duration relied on self-assesment of patients and periodic examinations 4 weeks, 4, 8, 12 and 18 month after treatment by a Minor's test. A digital photograph was taken during each follow-up visit and for assessment calculation of the affected skin area as described above. Quality of life was assessed by using the SF-36 questionnaire [2] before, 6 and 18 month after treatment.

Fig. 1-3: The affected side of the patient's face was coated with an iodine solution followed by a dusting of starch. After that the patient was asked to eat an apple. Gustatory sweating was delineated by the dark blue color following the iodine-starch reaction catalysed by perspiration. The identified area was marked with a pen and photographed with a digital Camera after placing a standard of 1cm^2 on the skin. The area showing the sweating was divided into fields of 1cm^2 each for injection of BTX.

Results

After 4 weeks the objective data showed an excellent effectiveness of treatment with BTX injections. There was a reduction of affected skin area from mean 34.4 (±16.3) cm2 before treatment to mean 3.8 (±4.6) cm^2 4 weeks after intracutaneous injection of BTX (<p=0.001).

Fig. 4-6: A fourtyseven years old man (M.M.) with 57.5 cm^2 effected skin surface before treatment (Fig. 4). BTX injections worked excellent in facial skin, but less effective in hairy temporal region with remnants of 12,5 cm^2 four weeks after treatment (Fig. 5). During follow-up there was a recurrence of sweating even in the facial region with clinical impact (Fig. 6).

This was decrease down to 11% of the initial surface. Because the perioral region was excepted there were some remnants of sweating in this area. In the temporal region treatment was little less effective than in the facial skin. 6 patients presented with some remnants of sweating in the temporal region (mean of 8.0 cm^2, range 3.5-16.6 cm^2). Even in those patients the reduction of sweating was highly significant (from mean 43.7 (±22.6) cm^2 before treatment to mean 8.0 8 (±5.7) cm^2 four weeks after injection of BTX: p=0.006). During follow-up to 18 month 13 patients developed recurrence of gustatory sweating. 5 patients had no signs of recurrent sweating at all. Overall there was a slight increase in sweating during follow-up from minimum 3.8 (±4.6) cm^2 4 weeks after treatment to 4.5 (±5.1) cm^2 after 4 month (p=0.685), to 4.8 (±5.4) cm^2 after 8 month (p=0.567), to 5.4 (±6.1) cm^2 after 12 month (p=0.392) and up to 8.2 (±10.2) cm^2 after 18 month (p=0.117). There was a recurrence of sweating from minimum 11% to 24% of the initially affected skin area 18 month later. Quality of life increased over the time. Significant levels could be seen in "Mental Health" and "Social Function".

Fig. 7-9: A thirtyfour old woman (P.A.) eight years after superficial parotidectomy presented with severe gustatory sweating. 48 cm2 skin surface was effected (Fig. 7). By treatment with BTX the sweating could be reduced to 3 cm^2. She showed up with 7 cm^2 twelve month (Fig. 8) and with 8 cm^2 eighteen month (Fig. 9) after injection.

Conclusion

BTX has proven to be a save and highly effective in treatment of gustatory sweating which improves quality of life. 60% of the patients had an asymtomatic period of at least 18 month.

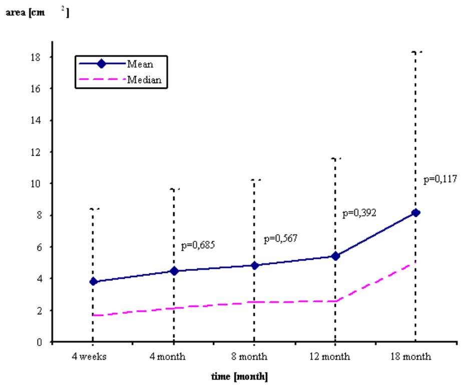

Fig. 10: Median increase of effected skin area during follow-up (n=17).

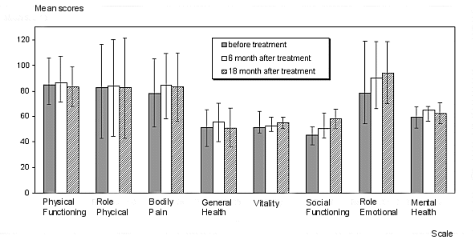

Fig. 11: Mean scores in FS-36 evaluation before treatment and after 6 and 18 month past injection (n=17).

References

[1] Bjerkhoel A, Trobbe O (1997) Frey's syndrome: treatment with botulinum toxin. J Laryngol Otol 111, 9:839-44
[2] Bullinger M (1995) German translation and psychmetric testing of the SF-36 Health Survey preliminary results from the IQOLA Project International Quality of Life Assessment. Soc Sci Med 41(10):1359-1366
[3] Drobik C, Laskawi R (1995) Frey's syndrome: treatment with botulinum toxin. Acta Otolaryngol Stockh 115, 3:459-61
[4] Drobik C, Laskawi R, Schwab S (1995) Therapy of Frey syndrome with botulinum toxin A. Experiences with a new method of treatment. Hno 43, 11:644-8
[5] Frey L (1923) Le syndrome du nerf auriculo-temporal. Rev Neurol Paris 2, 97
[6] Kuettner C, Tröger M, Dempf R, Eckardt A (2001) Efficiacy of botulinum toxin A in the treatment of gustatory sweating. Nervenarzt 72, 787-790
[7] Laage-Hellmann LE (1957) Gustatory sweating and flushing after konservativ parotiectomy. Acta Otolaryngol 48, 234
[8] Laccourreye O, Akl E, Gutierrez-Fonseca R, Garcia D, Brasnu D (1999) Recurrent gustatory sweating (Frey syndrome) after intracutaneous injection of botulinum toxin type A: incidence, management, and outcome. Arch Otolaryngol Head Neck Surg 125, 3:283-6
[9] Laskawi R, Schott T, Schroder M (1998) Recurrent pleomorphic adenomas of the parotid gland: clinical evaluation and long-term follow-up. Br J Oral Maxillofac Surg 36, 1:48-51
[10] Linder TE, Huber A, Schmid S (1997) Frey's syndrome after parotidectomy: a retrospective and prospective analysis. Laryngoscope 107, 1496-1501
[11] Minor V (1927) Ein neues Verfahren zu der klinischen Untersuchung der Schweißabsonderung. Dtsch Z Nervenheilkd 101, 302-3
[12] Naumann M (2001) Evidence-based medicine: botulinum toxin in focal hyperhydrosis. J Neurol 248(S1), 31-33

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Poster Faksimile:

TREATMENT OF GUSTATORY SWEATING WITH BOTULINUM TOXIN A

A PROSPECTIVE STUDY ON LONG-TERM EFFICIACY AND QUALITY OF LIFE

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