Botulinum A Toxin given intracutaneous for the treatment of focal hyperhidrosis

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Introduction [1]

Hyperhidrosis is sweating beyond what is necessary to maintain thermal regulation. Hyperhidrosis can be focal (localized) or may be generalized. Hyperhidrosis is socially embarrassing and may be disabling occupationally. Sweating is a function of the sympathetic nervous system. A sweat control center is located in the pre-optic area and anterior hypothalamus and contains neurons that are sensitive to changes in internal temperature as well as cerebral cortical events. Sweat glands are innervated by post ganglionic sympathetic cholinergic fibers. Emotionally induced sweating is usually palmoplantar and sometimes facial (forehead) while axillary sweating may result from emotional and thermal stimuli. Primary or essential axillary or Palmoplantar hyperhidrosis is estimated to affect 0.6 – 1% of population and may be inherited and is usually seen in adolescence but may begin in childhood and even infancy and does not occur while person is asleep.

The generalized hyperhidrosis may be caused by

- heat humidity and exercise
- acute febrile diseases
- chronic infections and neoplasia
- metabolic disorders which include thyrotoxicosis, diabetes mellitus, hypoglycemia, gout, pheochromocytoma, hyperpituitarism or menopause.
- Conditions like shock, syncope, intense pain, alcohol, drug withdrawal
- Neurologic causes like irritative hypothalamic lesion and Riley-Day syndrome. These are an autosomal recessive inherited disorder of the sensory and autonomic nerve function throughout the body and is characterized by sweating specially while eating, poor growth, long epidoses of vomiting, lack of response to painful stimuli, seizures, hypotonia, repeated fevers, decreased taste.
- Drugs as propronalal, physostigmine, pilocarpine, tricyclic antidepressants or venlafaxine.

Localized Hyperhidrosis

- may be primary or essential
- due to neurologic lesions
- may be gustatory (Frey's syndrome) as with spicy food
- may be due to heat

Treatment of hyperhidrosis include:

A- Topical medicine
1- Aluminum Chloride hexahydrate 20% in anhydrous ethyl alcohol [2]
2- Glutaraldehyale 10%
3- Tannic acid 2 – 5 %
4- Formalin solution 5 – 205
5- Anti cholinergics

B- Electrical treatment by iontophoresis [3]

C- Surgical treatment
1- sympathectomy [4]
2- excision of axillary sweat glands
3- lipo suction

D- Systemic drug
1- Treat any associated condition
2- Tranquillizers as valium
3- ANTICHOLINERGICS :
- Probanthine
- Robinul
- Ditropan
- Cogentin (benztropine) mesylate [5]

4- NSAID as indomethacin [6,7]
5- Calcium channel blockers
6- Clonidine hydrochloride (calapres) [8]
7- Botulinum A Toxin (Dysport) inhibits

Hyper-hidrosis of	Year													
	2003		2004		2005		2006		2007		2008		Total	
	F	M	F	M	F	M	F	M	F	M	F	M	F	M
Axilla	1	1	10	6	6	8	12	4	15	21	19	8	63	48
Palm	-	1	-	1	-	2	-	-	1	-	-	3	1	7
Sole	-	-	-	-	-	1	-	-	-	1	-	-	0	2
Total	1	2	10	7	6	11	12	4	16	22	19	11	64	57
Total	**3**		**17**		**17**		**16**		**38**		**30**		**121**	

release of acetyl choline at post ganglionic sympathetic fibers to sweat glands and is useful to treat palmar and axillary hyper hidrosis. [9, 10]

Patients and Method:

In Doha, Qatar, at the department of dermatology at Hamad Medical Corporation we have been using Botox A toxin to treat localized hyperhidrosis of axillae, palms and soles.

We treated 121 adult patients, 64 females and 57 males as shown in the following table

Before treatment, cold packs are placed on palms for 30 minutes and a total dose of 120 mu (mouse unit) botulinum A diluted with 0.5 cc of 0.9% sterile saline. The drug is injected subcutaneous at six different sites, i.e. 20 mu per site. The anhidrotic or hypohidrotic response is reported up to one year but starts to weaken in four months. Its use is limited by the need of repetitive relatively painful injections, the high cost of the toxin and the report of weakness of small muscles of hands. [10]

Botulinum A Toxin also inhibit the release of acetylcholine at neuromuscular junction and may cause transient paresis in muscles in which it is injected [11, 12] and it is the treatment of choice in cranial and cervical dystonias. [11, 13]

Botulinum A toxin given in axillary hyperhidrosis in the dose of 200 mu given at six different sites of one axilla lead to significant reduction of sweating over a period of 13 weeks after a single treatment. [14]

Botulinum A Toxin is a safe and effective treatment for primary axillary hyperhidrosis and produces high levels of patient satisfaction [15] and the treatment is easily administered. Botulinum toxin is an effective safe and long lasting alternative therapeutic modality for treatment of severe palmar hyperhidrosis. [16]

Conclusion

Botulinum Toxin is a polypeptide that is injected at the junction of the dermis and subcutaneous tissue where sweat glands are located and to minimize pain, it is advisable to do median and ulnar nerve block for palms and medial ankle and Tibial nerve block for plantar hyperhidrosis using 1 or 2% lidocaine. [17] The intracutaneous botulinum toxin is preferred to any conservative or surgical treatment and is the treatment of choice in localized hyperhidrosis. [18]

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