AILESBURY MEDICAL: 'The Uses of Botox in Dermatology" by Dr. Patrick Treacy

The benefits of BTX-A has been recognised in dermatology for many years and presently includes the treatment of hyperfunctional facial lines, focal hyperhidrosis, as well as paralysis of the anal sphincter in the therapy of anal fissure.

June 21, 2009 - PRLog -- The history of Botulinum Toxin

In studies dating from 1817 to 1822, Dr Justinus Kerner of Wurttemberg, Germany published the first systemic description of the clinical picture of botulism, a lethal type of food poisoning known since the era of the Roman Empire. The symptoms included malaise, nausea, vomiting, diarrhoea, diplopia, dilated pupils, fatigue, unsteady gait, dysphagia, thirst and when fatal, unconsciousness, rigour and ultimately death. Kerner investigated 155 cases in all. Tubinger Blatter fur Medizin and Arzneykunde. He treated 12 patients and also performed autopsies on some of them. Kerner also gave extracts from sausages that had been confiscated by the police to different animals and observed their reaction before dissecting the remains. He concluded that there was no cure for sausage poisoning and recommended that ‘all blood sausage and liverwurst still on the fireplace by February should be thrown out by the chimney sweep with the other rubbish’. With great foresight, he also noted that small amounts of the sausage poison might be useful for St Vitus’ dance Grusser O-J Die ersten systematischen Beschreibungen und teirexperimentellen Untersuchungen des Botulismus. The bacterium responsible for botulism was first isolated in 1897 from Clostridium botulinum by Emile P. Van Ermengem during dissection of postmortem tissue of victims who had died from gastroenteritis in Ellezelles, Belgium. He knew that the patients had consumed raw, salted pork and he was aware that a toxin produced by this bacterium caused this disease process. Van Ermengne E. Uber einen neuen anaeroben Bacillus und seine Beziehungen zum Botulismus Z Hygiene

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The use of Botulinum Toxin in medicine

The toxin was first isolated in crystalline form by Edward J. Schantz at Camp Detrick in Maryland in 1946. Dr Alan Scott, who was researching a nonsurgical treatment for strabismus during the 1970’s, eventually used this purified toxin. Indeed, the batch prepared by Schantz and used extensively by Scott (batch 79-11) was still in use as Botox (Allergan Inc, Irvine, Calif) until December 1997. The treatment was so successful that other researchers started looking at using botulinum toxin A in larger muscle groups and it quickly became recognized that the drug was effective in the treatment of dystonias and spasm in cerebral palsy. From here, the drug was used to treat blepharospasm and it was the decisive observation in 1987 of ophthalmologist Jean Carruthers that vertical glabellar creases (frown lines) disappeared following the use of Botox to treat patients for blepharospasm that ignited the explosive cosmetic application of this product today. Jean shared the seminal observation with her husband, Alastair, who was a dermatologist. Jean Carruthers was familiar with Alan Scott’s laboratory and was aware of the potential cosmetic applications for the product. When she mentioned her findings to Alan Scott, she discovered that he had apparently used the preparation for such purposes in 1985.

The rising influence of the Carruthers

The Carruthers presented their findings in a seminal paper entitled 'The treatment of glabellar furrows with
botulinum A exotoxin’ Carruthers JDA, Carruthers JA. J Dermatol Surg Oncol. 1990; 16:83. In the same year, Jankovic and Schwartz published a paper demonstrating the use of botulinum toxin in the treatment of cranial-cervical dystonia, spasmodic dysphoria, other focal dystonias, and hemifacial spasm. Jankovic J, Schwartz K, Donovan DT. Botulinum toxin treatment of cranial-cervical dystonia, spasmodic dysphoria, other focal dystonias and hemifacial spasm. J Neurol Neurosurg Psychiatry.1990;53:633-639. The Carruthers also presented their findings at the annual meeting of the American Society for Dermatologic Surgery, Orlando, Florida on March 13-17, 1991. They continued to research the cosmetic effect of botulism toxin and it was their 1992 article in J Dermatol Surg Oncol.1992;18:17-21 set the stage for the FDA to approve botulinum toxin A for use in cosmetic medicine. This was gained for the treatment of the glabellar complex in April 2002 and it is expected to be approved for treatment of crows feet and forehead wrinkles within the near future. It is also expected that botulinum A exotoxin will also be approved for therapeutic use in chronic anal fissures, migraines, and, of course, hyperhidrosis

Dermatology

Surprisingly, the benefits of BTX-A has only recently been recognised in dermatology within the past ten years and presently includes the treatment of hyperfunctional facial lines, focal hyperhidrosis, as well as paralysis of the anal sphincter in the therapy of anal fissures.

(a) The treatment of Axillary Hyperhidrosis

Primary hyperhidrosis is defined as excessive sweating, which is normally independent of thermoregulatory impulses in the absence of a detectable organic cause. It presents focally as palmar, plantar or axillary. The sites most commonly affected are the palms, soles, and axillae. This condition may be idiopathic or secondary to other diseases, metabolic disorders, febrile illnesses, or medication use. The axillary type is the single most prevalent form of focal hyperhidrosis and it produces the greatest social and physical discomfort. Botulinum toxin injections are effective because of their anticholinergic effects at the neuromuscular junction and in the postganglionic sympathetic cholinergic nerves in the sweat glands. Because the sweat glands also use acetylcholine as neurotransmitter, BTX also produces anhidrosis. (Heckmann M, Ceballos-Baumann AO, Plewig G: Botulinum toxin A for axillary hyperhidrosis (excessive sweating). N Engl J Med 344:488, 2001). I personally find most patients are unresponsive to topical antiperspirant agents such as aluminium salt solutions and an intradermal injection of botulinum toxin A is a quick, highly efficient and safe remedy in contrast to invasive surgical procedures, such as excision, curettage or liposuction of the axillary area. BTX-A has been approved for use in patients with hyperhidrosis in Canada (2001) and is pending approval in the US for this purpose. (Naumann M, Lowe NJ. Botulinum toxin type A in treatment of bilateral primary axillary hyperhidrosis: randomised, parallel group, double blind, placebo controlled trial.BMJ. 2001 Sep 15;323(7313):596-9). The treatment of plantar or palmar hyperhidrosis is a little more difficult due to pain and the possibility of thenar muscle weakness. I have done it many times in the plantar area without a full nerve block and I personally feel the muscle weakness in the hand is somewhat overplayed and usually quite temporary. (Naumann M, Flachenecker P, Brocker EB, Toyka KV, Reiners K. Botulinum toxin for palmar hyperhidrosis . Lancet 1997;349:252).

(b) The treatment of Anal Fissures

The exact etiology of anal fissures is unknown, but trauma from the passage of a particularly hard or painful bowel movement is thought to be the initiating factor. Initial minor tears in the anal mucosa heal rapidly without long-term sequelae in most people. Others, progress to acute and chronic anal fissures and the internal sphincter begins to spasm when a bowel movement is passed. An injection of BTX-A can treat chronic, uncomplicated anal fissures with increased sphincter tone and it is well tolerated, not causing
apparent faecal incontinence. The toxin is injected directly into the internal anal sphincter, performing a chemical sphincterotomy. The effect lasts approximately 3 months, until the nerve endings regenerate. This 3-month period may allow acute fissures to heal and symptoms to resolve. Initial relief of symptoms with Botox injection but recurrence after 3 months suggests that the patient would benefit from surgical sphincterotomy. (Jost WH, Schimrigk K: Therapy of anal fissure using botulin toxin. Dis Colon Rectum 1994 Dec; 37(12): 1321-4)

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