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REVIEW

The therapeutic usage of botulinum toxin (Botox) in non-cosmetic head and neck conditions – An evidence based review

Kamran Habib Awan *

Department of Oral Medicine & Diagnostic Sciences, College of Dentistry, King Saud University, Riyadh, Saudi Arabia

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KEYWORDS

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Abstract Botulinum toxin (Botox) is an exotoxin produced from Clostridium botulinum. It blocks the release of acetylcholine from the cholinergic nerve end plates resulting in inactivity of the muscles or glands innervated. The efficacy of Botox in facial aesthetics is well established; however, recent literature has highlighted its utilization in multiple non-cosmetic medical and surgical conditions. The present article reviews the current evidence pertaining to Botox use in the non-cosmetic head and neck conditions. A literature search was conducted using MEDLINE, EMBASE, ISI Web of Science and the Cochrane databases limited to English Language articles published from January 1980 to December 2014. The findings showed that there is level 1 evidence supporting the efficacy of Botox in the treatment of laryngeal dystonia, headache, cervical dystonia, masticatory myalgia, sialorrhoea, temporomandibular joint disorders, bruxism, blepharospasm, hemifacial spasm and rhinitis. For chronic neck pain there is level 1 evidence to show that Botox is ineffective. Level 2 evidence exists for vocal tics and trigeminal. For stuttering, facial nerve paresis, Frey's syndrome and oromandibular dystonia the evidence is level 4. Thus, there is compelling evidence in the published literature to demonstrate the beneficial role of Botox in a wide range of non-cosmetic conditions pertaining to the head and neck (mainly level 1 evidence). With more and more research, the range of clinical applications and number of individuals getting Botox will doubtlessly increase. Botox appears to justify its title as 'the poison that heals'.

* Tel.: +966 (1) 467 7422; fax: +966 (1) 467 9018.
E-mail address: kamranhabibawan@gmail.com.
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Contents

1. Introduction

Botulinum toxin (Botox) is a protease exotoxin produced by a Gram-positive, rod-shaped, anaerobic, spore-forming, motile bacterium called Clostridium botulinum. When released, it causes inactivity of muscles or glands by blocking the release of acetylcholine from cholinergic nerve endings. Although its effects are short-lived, varying the frequency and dosage of administration may alter them. Botox is a standout among the most powerful normally occurring organic toxins and in the past has been in charge of numerous inadvertent deaths before its disclosure in prescription. It was first used in medicine in 1980 to treat strabismus. Although in 1989, the cosmetic effects of Botox on wrinkles were noticed, it was only in 2002, that it gained global recognition as a potential cosmetic therapeutic agent after the approval from Food and Drug Administration (Lang, 2004).

As of late, the therapeutic uses of Botox have extended exponentially to incorporate an extensive variety of medical and surgical conditions. This has been helped by a more noteworthy comprehension of its hidden physiology and in addition enhanced efficacy and safety. This review evaluates the evidence on Botox use in non-cosmetic conditions of the head and neck.

2. Materials and methods

2.1. Search strategy

Detailed automated literature searches of MEDLINE, EMBASE, ISI Web of Science and the Cochrane databases limited to English Language articles published from January 1980 to December 2014 were conducted. The search strategy was based on the recommendation of Oxford Center for Evidence-Based Medicine. The following keywords and Boolean operators were used, 'botox' and 'larynx' or 'dysphonia' or 'dystonia' or 'tremor' or 'oral' or 'myoclonus' or 'temporo mandibular' or 'sialorrhoea' or 'bruxism' or 'oesophagus' or 'dysphagia' or 'speech' or 'face' or 'autonomic nervous system' or 'sweating' or 'torticollis' or 'pain' or 'migraine' or 'headache' or 'myalgia' or 'neuralgia' or 'nose' or 'rhinitis'.

2.2. Data collection and extraction

Titles and abstract of the studies that fulfilled the criteria were initially screened. Full texts of the studies that were found relevant judged by the abstract were independently and manually assessed. Further references were obtained through their bibliographies.