

Botulinum injection as a treatment option in allergic rhinitis: a systematic review and meta-analysis

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ABSTRACT

Introduction: Botulinum toxin type A (BTX-A) is used in treating a vast range of medical conditions for the past decade. BTX-A can be a possible choice in treating patients with allergic rhinitis. This study aimed to assess the potential treatment and effectiveness of BTX-A in treating refractory allergic rhinitis. **Materials and Methods:** Electronic searches for RCTs were conducted using CENTRAL (Cochrane Central Register of Controlled Trials), PubMed, Scopus and Google Scholar databases. Randomised controlled trials (RCTs) that assessed the effect of BTX-A in allergic rhinitis patients in comparison to either a placebo or an active comparator was included. The primary outcome was mainly to evaluate total nasal symptom score (TNSS) with secondary outcomes for individual nasal symptom score (INSS), disease-specific quality of life (QOL) and adverse effects. **Results:** Five RCTs had been identified from 244 potential articles. Most articles were reported from Middle Eastern countries. A total of 187 allergic rhinitis patients with a mean age of 31.8 years were included in the meta-analysis. As compared to placebo, the effects on total nasal symptom score (TNSS) favoured BTX-A; the ≤ 4 -week effect (SMD -2.07, 95%CI: -3.58, -0.5; three RCT; $p < 0.01$). The beneficial effects were sustained up to 12 weeks (SMD -2.42, 95%CI: -4.22, -0.62; three RCTs; $p < 0.01$). There was also improvement in the individual nasal symptoms score in rhinorrhoea (SMD -2.18, 95%CI: -3.74, -0.62; two RCTs; $p < 0.01$), sneezing (SMD -1.88, 95%CI: -2.60, -1.15; two RCTs; $p < 0.01$) and itchiness (MD -1.57, 95%CI: -2.45, -0.69; one RCT; $p < 0.01$). Compared with active total comparators, triamcinolone injection (20 mg/mL) and cetirizine (10mg) showed no significant difference in the TNSS at four weeks (SMD 0.3, 95%CI: -0.96, 1.01; two RCTs; $p = 0.96$). The risk ratio of adverse events favoured BTX-A over cetirizine (one RCT). However, there was no difference between BTX-A and cetirizine on quality of life (QOL) (one RCT). **Conclusion:** BTX-A had shown improvement in TNSS and individual nasal symptoms such as rhinorrhoea, sneezing and itchiness. The immediate effect within four weeks was demonstrated up to 12 weeks. BTX-A was safe, well tolerated and may be considered as an alternative option to refractory allergic rhinitis.