SAFETY AND EFFICACY OF ONABOTULINUMTOXINA FOR THE TREATMENT OF NEUROGENIC AND IDIOPATHIC OVERACTIVE BLADDER: A META-ANALYSIS OF TEN RANDOMIZED CONTROLLED TRIALS

Hypothesis / aims of study
Overactive bladder (OAB) affects 10.4% of worldwide population and adversely impacts the quality of life. Antimuscarinic agents are a widely used treatment for OAB but they are often ineffective or not tolerated. OnabotulinumtoxinA (Botox) has been evaluated as an alternative therapy for OAB patients who do not respond optimally to first line treatment. The aim of this study is to synthesize evidence from published Randomized Controlled Trials (RCTs) about the safety and efficacy of Botox compared to placebo for the treatment of patients with OAB.

Study design, materials and methods
A computer literature search for PubMed was carried out using the following key words: “OnabotulinumtoxinA; overactive bladder”. We included RCTs comparing Botox and placebo for patients with idiopathic and neurogenic overactive bladder. Data were extracted and analysed using RevMan version 5.3 for windows.

Results
Ten RCTs were included in this study with a total of 2648 patients (OnabotulinumtoxinA group n= 1591 and placebo group n= 1057). Botox doses ranged from 50 units to 300 units mg and were expressed as five subgroups: 50 units, 100 units, 150 units, 200 units, and 300 units. The overall effect estimate favoured Botox than placebo in terms of: frequency of micturition/24 hours (MD -1.31, 95% CI [-1.58, -1.05], P<0.00001), MCC (MD 137.17, 95% CI [118.79, 155.55], P<0.00001), MDP (MD -31.61, 95% CI [-37.02, -26.20], P<0.00001), urgency episodes, urinary incontinence, and volume void per micturition were pooled as standardized mean difference (SMD between Botox group and placebo group) in a meta-analysis model using inverse variance (IV) method. Heterogeneity was assessed by visual inspection of the forest plots and measured by I² and Chi-square tests. In case of significant heterogeneity (Chi-square P<0.1), a random effect model was used. Otherwise, a fixed effect model was used. Complications were pooled as relative risk (RR) in a fixed effect model using Mantel Haenzel (M-H) method. To investigate effects of different Botox doses, we performed subgroup analysis. Heterogeneity was resolved by sensitivity analysis. P value below 0.05 was considered significant.

Interpretation of results
Botox is effective for the treatment of neurogenic and idiopathic overactive bladder. This improvement was significant in the subgroups of 200 units and 300 units of Botox. Urinary tract infection was higher in Botox group. However, the risk of pyrexia did not differ significantly between either of the two groups. The risk of urine retention was 12 folds higher in patients treated with botox compared to those assigned to placebo.

Concluding message
Intradetrusor injections of Botox is effective for the treatment of neurogenic and idiopathic overactive bladder in doses of 200 units and 300 units. However, possible complications particularly urine retention should be taken into consideration.

Disclosures
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