

MIRABEGRON VERSUS TOLTERODINE FOR THE TREATMENT OF OVERACTIVE BLADDER: A META-ANALYSIS OF FIVE RANDOMIZED CONTROLLED TRIALS

Hypothesis / aims of study

Mirabegron is a β_3 adrenoreceptor agonist that relaxes detrusor muscles. Mirabegron has been proved to be effective in the treatment of overactive bladder (OAB). However, its superiority to Tolterodine (antimuscrinic agent) remains questionable. The aim of this study is to compare the safety and efficacy of Mirabegron versus Tolterodine for the treatment of overactive bladder from published RCTs.

Study design, materials and methods

A computer literature search for PubMed was carried out using the following key words: "Mirabegron AND Tolterodine AND overactive bladder". We included Randomized Controlled Trials (RCTs) comparing Mirabegron and Tolterodine for patients with overactive bladder. Data were extracted and analysed using RevMan version 5.3 for windows. Changes in urgency episodes/24 hours, number of micturition/24 hours, incontinence episodes/24 hours, urge incontinence episodes/24 hours, volume void per micturition and nocturia episodes were pooled as mean difference (MD between Mirabegron and Tolterodine group) in a fixed effect model using inverse variance (IV) method. Complications were pooled as relative risk (RR) in a fixed effect model using Mantel Haenzel (M-H) method. Heterogeneity was assessed by visual inspection of the forest plots and measured by I-square and Chi-square tests. To investigate effects of different Mirabegron doses, we performed subgroup analysis. P value below 0.05 was considered significant.

Results

Five RCTs were included in this study (N=5636 patients, Mirabegron group n=3805, and Tolterodine group n=1831). Mirabegron doses ranged from 25 mg to 200 mg and were expressed as five subgroups: 25 mg, 50 mg, 100 mg, 150 mg and 200 mg. The overall effect estimate favored Mirabegron than Tolterodine in terms of urgency episodes/24 hours (MD -0.21, 95% CI [-0.40, -0.02], P=0.03), frequency of micturition/24 hours (MD -0.13, 95% CI [-0.24, -0.02], P=0.02), urge incontinence episodes/24 hours (MD -0.22, 95% CI [-0.41, -0.03], P=0.02) and nocturia episodes (MD -0.06, 95% CI [-0.11, -0.00], P=0.03). There was no statistical significant difference between Mirabegron and Tolterodine in terms of volume void per micturition (MD 0.24, 95% CI [-1.76, 2.24], P=0.81).

For complications, the pooled effects were: (1) constipation (RR 0.95, 95% CI [0.67, 1.35], P=0.078); (2) dry mouth (RR 0.29, 95% CI [0.22, 0.37], P<0.00001); (3) cardiac disorders (RR 0.67, 95% CI [0.53, 0.86], P=0.002); (4) vascular disorders (RR 0.90, 95% CI [0.73, 1.10], P=0.29); and (5) nervous disorders (RR 1.03, 95% CI [0.77, 1.36], P=0.85).

Interpretation of results

Mirabegron improved Urgency episodes/24 hours, micturition/24 hours, urge incontinence episodes/24 hours and nocturia episodes better than Tolterodine. There is no difference between Mirabegron and Tolterodine in terms of incontinence episodes or volume void per micturition. Mirabegron showed less constipation, dry mouth and cardiac disorders than Tolterodine.

Concluding message

Mirabegron is superior to Tolterodine for the treatment of overactive bladder. It achieves better clinical improvement with a risk of complications less than Tolterodine.

Disclosures

Funding: None to declare **Clinical Trial:** No **Subjects:** HUMAN **Ethics not Req'd:** It is a meta-analysis of published RCTs **Helsinki:** Yes **Informed Consent:** No