

OBJECTIVE EFFICACY OF MIRABEGRON ON STORAGE AND VOIDING FUNCTION IN PATIENTS WITH OVERACTIVE BLADDERS BASED ON A URODYNAMIC STUDY

Hypothesis / aims of study

Overactive bladder (OAB) is a symptom syndrome that is defined as urinary urgency, usually accompanied by frequency and nocturia and may or may not involve urge urinary incontinence. Oral anti-muscarinic agents are currently the mainstay pharmacotherapy for the treatment of OAB. In the absence of an alternative therapy, patients may respond suboptimally to anti-muscarinic agents or find that anti-muscarinic therapy is limited by associated adverse events such as dry mouth and constipation. Such patients either persist with the unsatisfactory treatment or discontinue therapy.

Mirabegron is a novel, once-daily, orally active, first-in-class selective β_3 -adrenoceptor agonist. The results of the phase III clinical trials performed in the US, Europe, and Japan using this agent have reported to relieve subjective symptoms associated with OAB. However, objective evidence proving that, this drug is effective in improving storage function and does not affect voiding function is absent. We administered mirabegron to women with OAB and evaluated the effects on storage and voiding function based on a urodynamic study (UDS) performed before and after drug administration.

Study design, materials and methods

In this prospective study, we enrolled 45 treatment-naïve women with OAB symptom scores (OABSS) of ≥ 3 and ≥ 1 urgency episodes a week. The OABSS is a 4-item questionnaire that collectively expresses the OAB symptoms in terms of a single score. The OABSS was originally developed and psychometrically validated in Japan and is currently used in the Netherlands. The patients received 50 mg mirabegron once a day for 12 weeks. The OABSS was conducted before and after administration to evaluate subjective symptom severity. In this UDS, we assessed the first desire to void (FDV), maximum cystometric capacity (MCC), and occurrence of uninhibited detrusor contraction as parameters of storage function. Maximum flow rate (Qmax), detrusor pressure at Qmax (PdetQmax), and residual urine volume (PVR) were assessed as parameters of voiding function.

Results

40 patients eligible for inclusion in efficacy analysis. The patients' mean age was 71.9 years. Between pre-administration and post-administration, the mean OABSS score decreased from 8.9 to 5.5 points ($p < 0.001$), indicating significant improvement of subjective symptoms. From the UDS results, we observed a statistically significant improvement in the storage function parameters, with mean FDV increasing from 99 to 133 mL ($p < 0.001$) and MCC from 183 to 239 mL ($p < 0.001$). Although uninhibited detrusor contraction was observed in 26 patients (65.0%) before administration, no contraction was observed in 16 of these 26 patients (61.5%) after administration ($p = 0.01$).

On voiding function, Qmax improved from 15.6 to 17.6 mL/s ($p = 0.18$), mean PdetQmax increased from 36.4 to 36.8 cm H₂O ($p = 0.77$), and PVR decreased from 24 to 22 mL ($p = 0.45$), demonstrating that mirabegron does not inhibit voiding function. Treatment was discontinued in only 2 patient (4.4%) because of the adverse reaction involving dry mouth and headaches. 3 patient was unable to undergo PFS after administration

Concluding message

Mirabegron was shown to be effective in women with OAB in terms of both subjective symptoms and bladder storage function. In addition, this drug does not affect voiding function, and the incidence of side effects is low. Mirabegron may be a new therapeutic alternative for treating OAB.

Disclosures

Funding: none **Clinical Trial:** Yes **Public Registry:** No **RCT:** No **Subjects:** HUMAN **Ethics Committee:** the ethics committee of the Nagoya University Graduate School of Medicine **Helsinki:** Yes **Informed Consent:** Yes