Anticholinergic drugs and risk of Cognitive Impairment or Dementia in patients with Overactive Bladder Syndrome: A Systematic Review and Meta-Analysis

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Introduction

Overactive bladder syndrome (OAB) is one of the most common medical conditions referred to Urologists (1).

Anticholinergic medications are commonly used as to treat such patients (2).

The relationship between cognitive impairment or dementia and anticholinergic medications remains uncertain.

There has been an ongoing debate regarding the relationship between the adverse events of these drugs and Central Nervous system (CNS) impairment in these patients.

The aim of our study is to evaluate the reported relationship between using anticholinergic drugs for patients with OAB and the risk of cognitive impairment or dementia as an adverse event.

Methods

A literature search was conducted using PubMed, Scopus, Web of science, and Science Direct to identify relevant studies published until December 2018.

Studies included were randomized controlled trials (RCTs) and cohort studies in patients with OAB, which used the mean change of Mini-Mental State Examination (MMSE) as a scale for assessment of the cognitive status, comparing anticholinergic agents with placebo or other active treatments in relation to deterioration in the MMSE score, as a primary outcome, and CNS adverse events, as a secondary outcome.

Data were pooled as risk ratio (RR) or mean difference (MD) between the two compared groups in a random effects meta-analysis model. Subgroup and sensitivity analysis were conducted.

Results

Three cohort studies and six RCTs with a total of 2,594 participants (mean age 70.7 ± 9.4 years) were included in the analysis.

The RCTs consisted of a total 1,626 participant with OAB of which 949 participants were using anticholinergic drugs. This included Fesoterodine (41.4%), Darifenacin (3.0%), Tropism (2.0%), Oxybutynin (7.5%) or Placebo (48.1%).

The cohort studies consisted of 968 participants with OAB using Solifenacin (82.5%), Darifenacin (5.2%), Oxybutynin (4.4%), Tropism (2.7%), Tolterodine (2.2%) or other drugs including Placebo (3.0%).

The longest follow up duration was 6 months. Meta-analysis of the primary outcome showed that Darifenacin was slightly more significant in lowering MMSE Score compared to Tropism (MD = -1.60, 95% CI [-3.10, -0.10], p=0.04).

This is the only study that showed dementia as a side effect (11.9%). There was no significant difference in MMSE between Oxybutynin Extended and Immediate Release.

The pooled estimate of two studies did not favor either Fesoterodine or Placebo to reducing MMSE Score (MD = -0.01, 95% CI [-0.25, 0.27], p=0.94).

No significant differences were observed between other anticholinergic drugs when compared to each other or to Placebo.

With regards to the secondary outcomes, Fesoterodine had higher risk of Dizziness than Placebo (RR= 2.82, 95% CI [1.12, 7.09], p=0.03).

No significant difference was observed in term of Serious Side Effects between Fesoterodine and Placebo (RR= 1.45, 95% CI [0.76, 2.78], p=0.28).

Conclusions

From our review study, we can see that there were a few studies that discussed the effects of anticholinergic medication on cognitive impairment, using the Mini Mental State Examination as a standard scale for cognition and dementia.

However, none of the RCTs discussed the direct effect on dementia except for one cohort study that showed dementia as side effect but was not significant.

References
