Arab Journal of Urology (2015) **13**, 155–161

Arab Journal of Urology
(Official Journal of the Arab Association of Urology)

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ANDROLOGY/SEXUAL MEDICINE
REVIEW

Phosphodiesterase type 5 inhibitors for treating erectile dysfunction and lower urinary tract symptoms secondary to benign prostatic hyperplasia: A comprehensive review

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Received 12 November 2014, Received in revised form 15 May 2015, Accepted 10 June 2015
Available online 10 July 2015

KEYWORDS

Benign prostatic hyperplasia;
Erectile dysfunction;
LUTS;
PDE5 inhibitor

Abstract Many men have coexistent erectile dysfunction (ED) and lower urinary tract symptoms secondary to benign prostatic hyperplasia (LUTS/BPH). Phosphodiesterase type 5 (PDE5) inhibitors are effective for treating both of these conditions independently. In this review we summarise the evidence supporting a link between ED and LUTS/BPH, and the results from key clinical studies related to the use of PDE5 inhibitors for treating both conditions. The results from these studies suggest that men who have both ED and LUTS/BPH, and are concerned

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Peer review under responsibility of Arab Association of Urology.

Production and hosting by Elsevier

http://dx.doi.org/10.1016/j.aju.2015.06.004

ABBREVIATIONS

ED, erectile dysfunction;
QoL, quality of life;
5ARI, 5α-reductase inhibitor;
PDE5, phosphodiesterase type 5;
NO, nitric oxide;
cGMP, cyclic guanosine monophosphate;
RhoA, Ras homologue gene family member A;
ROCK, Rho-associated protein kinase;
IIEF, International Index of Erectile Function;
EF, erectile function (domain);
AE, adverse event

about their sexual dysfunction, might benefit from single-agent, holistic treatment with a PDE5 inhibitor.

Introduction

Many men with LUTS secondary to BPH (LUTS/BPH) have coexistent erectile dysfunction (ED) [1], suggesting that there might be a link between these conditions. Indeed, in a cohort of men scheduled for the surgical management of LUTS/BPH, 36% with moderate LUTS/BPH and 94% with severe LUTS/BPH were found to have coexisting ED [2]. Further, in an integrated analysis of results from three clinical trials of tadalafil for LUTS/BPH, ≈70% of men had a history of ED [3]. Interestingly, ED appears to be under-recognised by physicians treating men with LUTS/BPH. Specifically, the results of a survey in the USA showed that urologists estimate the prevalence of ED to be <20% in men with LUTS/BPH, and that primary-care physicians estimate the prevalence to be <30% [4]. Hence, there appears to be a need for physicians to become more aware that a high proportion of men with LUTS/BPH also have ED. In addition to the well-known physical consequences of these conditions, both can have a pronounced negative effect on an individual's quality of life (QoL), with men who have both ED and LUTS/BPH having more pronounced deficits in QoL than men who have either condition alone [5]. As a result, many men with ED and/or LUTS/BPH will seek medical treatment.

The current medical treatments for LUTS/BPH include α-blockers, 5α-reductase inhibitors (5ARIs) and, more recently, the phosphodiesterase type 5 (PDE5) inhibitor, tadalafil. Of these, PDE5s are also a well-established and effective treatment for ED [6]. Although α-blockers and 5ARIs can be effective for managing LUTS/BPH, these treatments can compromise sexual function in some men by decreasing libido, increasing the rate of ejaculatory disorders, and/or increasing the rate of ED [7]. Specifically, in the CombAT [8] and MTOPS [9] randomised controlled trials, patients who received 5ARIs, α-blockers, or a combination of both therapies had rates of sexual adverse events of ≈1–9%, with the highest rate occurring with combined therapy [7]. Furthermore, in a large retrospective study, Corona et al. [10] found that the use of 5ARIs was associated with a higher risk of hypoactive sexual desire and a perceived reduction in sleep-related erections. Therefore, for men who have coexistent ED and LUTS/BPH, treatment with a PDE5 inhibitor might provide a holistic means of relieving the symptoms of both conditions without increasing the risk of sexual adverse events that might occur with α-blockers or 5ARIs.

The objective of this review was to summarise the evidence supporting a link between ED and LUTS/BPH, as well as evidence from key clinical studies on the use of PDE5 inhibitors for managing patients with ED and LUTS/BPH. In addition, we hope this review will serve to remind physicians that a large proportion of men with LUTS/BPH will also have ED, and vice versa. As tadalafil is the only PDE5 inhibitor currently approved for treating LUTS/BPH, our review focused on the findings from clinical studies of tadalafil.