Overactive bladder (OAB) and its association with prostatic parameters

Wei Shen Tan, Wah Yun Low, Chirk Jenn Ng, Ee Ming Khoo, Evelyn L.M. Ho and Hui Meng Tan

Abstract

Background: Overactive bladder (OAB) is an idiopathic condition characterized by urgency with or without urge incontinence often associated with frequency or nocturia. In this study, we hypothesized that prostatic parameters might be responsible for symptoms seen in OAB patients.

Methods: This is a cross-sectional study involving 1007 men ≥40 years old; with a response rate of 53.6%. Face-to-face interviews were carried out with semi-structured questionnaires which included socio-demography, self-reported medical illness and an OAB questionnaire using a 5-point Likert scale. OAB was defined as ‘quite a bit’ to ‘a very great deal’ in either questions: “An uncomfortable urge to urinate”, “A sudden urge to urinate with little or no warning”, “An uncontrollable urge to urinate” and “Urine loss associated with a strong desire to urinate”. Prostatic parameters were assessed using transrectal ultrasound, International Prostate Symptom Score (IPSS) questionnaire, urinalysis and uroflow studies.

Results: Results from 537 men with a mean age of 58.2±8.1 years were analysed. The prevalence of OAB was 16.9% (n=91). The prevalence of lower urinary tract symptoms or LUTS (IPSS moderate-severe) was 36.1% (n=195). Men with OAB were significantly more likely to score worse on IPSS (OAB: 30%, non-OAB: 4.7%, p<0.001) and prostate volume (OAB: >30cc, non-OAB: 19.5%, p = 0.002), and urine white cell count or WCC (OAB: >5 WC9/L (OAB: 5.5%, non-OAB: 1.3%, p = 0.025) were significantly associated with OAB. Multivariate regression analysis revealed that men with severe LUTS (OAB: 35.2%, non-OAB: 19.5%, p = 0.002) and prostate volume (OAB: >30cc (p = 0.07, OR: 2.0, CI 95%: 1.2-3.4) and prostate volume >30cc (OR: 6.7, CI 95%: 3.4-13.4) and prostate volume were independently associated with OAB.

Conclusions: OAB was significantly associated with prostate calcification, larger prostate volume (≥30cc) and urinary WCC (≥5 WC9/L). However, only severe LUTS and prostate volume >30cc were independently associated with OAB.

Introduction

Overactive Bladder (OAB) is an idiopathic chronic medical condition due to underlying detrusor over-activity, which can adversely affect the quality of life of sufferers [1]. The International Continence Society defines it as urgency with or without urge incontinence often associated with frequency or nocturia after the exclusion of any obvious pathology such as infection and stones [2]. The diagnosis of OAB is essentially a clinical diagnosis, which encompasses the storage components of lower urinary tract symptoms (LUTS).

However, patients suffering from OAB often have many concurrent pathologies resulting in detrusor over activity such as bladder outlet obstruction (BOO), neurogenic bladder, renal calculi, stress incontinence, pelvic organ prolapse and previous surgery.

Benign prostatic hyperplasia (BPH) commonly causes LUTS secondary to BOO. It has been suggested that BOO results in detrusor myocyte hypertrophy, which is less stable and contracts at a lower threshold [3]. Urgency seen in OAB can be explained by increased connective tissue infiltration causing enhanced electrical coupling leading to spontaneous mechanical activity [4]. However, studies have failed to show a correlation between total prostate size and LUTS [5,6]. Interestingly, recent studies have shown that tolerodine, an antimuscarinic used in the treatment of OAB, is effective in treating patients with LUTS secondary to BPH [7].

Prostate calcification is a common incidental finding in men, although they generally do not cause symptoms. However, recent evidence suggests that prostatic calcification is associated with increased inflammation and bacterial colonization [8]. Inflammatory cytokines such as ATP, substance P and calcitonin gene related peptide is known to activate afferent neurons in the bladder leading to symptoms of OAB [9].

Taken together, we hypothesized that prostatic parameters, in particular prostate volume and prostatic calcification, might be responsible for symptoms seen in OAB patients.

Methods

Between 2008 and 2009, 1007 men who were previously randomly selected in the Subang Men’s Health Study were invited for a subsequent cross-sectional study. Of these, 537 men (53.0%) participated in the current study. All