



Prevalence and impact of urinary incontinence in men with cystic fibrosis

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Abstract

Objectives To determine the prevalence and impact of urinary incontinence (UI) in men with cystic fibrosis (CF).

Design Prospective observational study.

Setting Adult CF clinics at tertiary referral centres.

Participants Men with CF ($n = 80$) and age-matched men without lung disease ($n = 80$).

Interventions Validated questionnaires to identify the prevalence and impact of UI.

Main outcome measures Prevalence of UI and relationship to disease specific factors, relationship of UI with anxiety and depression.

Results The prevalence of UI was higher in men with CF (15%) compared to controls (10%) ($p = 0.339$). Men with CF and UI had higher scores for anxiety than those without UI (mean 9.1 (SD 4.8) vs 4.7 (4.1), $p = 0.003$), with similar findings for depression (6.8 (4.6) vs 2.8 (3.4), $p = 0.002$) using the Hospital Anxiety and Depression Scale.

Conclusions Incontinence is more prevalent in adult men with CF than age matched controls, and may have an adverse effect on mental health. The mechanisms involved are still unclear and may differ from those reported in women.

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Keywords: Cystic fibrosis; Urinary incontinence; Male

Introduction

Urinary incontinence (UI) is defined by the International Continence Society as the complaint of any involuntary leakage of urine [1] and it is a highly prevalent condition worldwide [2]. A pooled prevalence of UI of 4.8% in all men aged between 19 and 44 years has been reported [3];

however, research into incontinence in younger men or men with lung diseases has been limited

Cystic Fibrosis (CF) is characterised by suppurative lung disease with chronic, progressive and irreversible loss of pulmonary function, sputum production and consequent cough [4]. The reported mean life expectancy for Australian men with CF is 27.9 years [5]. There may be features of the disease and its management that predispose the development of UI through increased demands on the pelvic floor. Such features may include regular treatments of airway clearance techniques, physical exercise and paroxysms of prolonged

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coughing. Impaired lung function is commonly observed in people with CF, and this has been demonstrated to have an inverse association with UI in older men [6], while dyspnoea has been associated with impaired sphincter control in some circumstances [7]. It has been demonstrated that the prevalence of UI is markedly higher in women with CF than in the general population, with prevalence rates up to 68% compared to 31% in age matched controls [8,9]. While coughing is an identified risk factor for stress UI in women, other risk factors and mechanisms in women with CF are poorly understood.

To date there is limited information regarding the prevalence or factors associated with incontinence in men with CF. Previous reports range from 2.2% [10] to 16% [11]. Clinically, men with CF are not routinely screened for lower urinary tract problems, and it is recognised that men are less likely to report symptoms than women [12]. It is difficult to estimate the true prevalence of this problem in men with CF as a direct comparison with healthy controls has never been undertaken. This project investigated the prevalence and impact of incontinence in adult men with CF as compared to age and sex matched controls, to determine the significance of the clinical problem in this population.

Patients and methods

Design

This observational study received institutional ethics approvals from Alfred Health, La Trobe University, University of Melbourne and Southern Health and all participants provided informed written consent.

Participants

Men with CF diagnosed by conventional methods and in a stable clinical state were recruited through outpatient clinics at the Alfred Hospital and Monash Medical Centre, the tertiary centres responsible for the care of adults with CF in the state of Victoria, Australia.

For the control group, men over 18 years of age with no history of diagnosed respiratory disease (e.g. asthma) and smoking history less than 10 pack years were eligible for inclusion. A flyer seeking volunteers for the control group was posted around both centres.

Men were excluded from both groups if they had language, cognitive or other impairment precluding self completion or understanding of the questionnaires.

Intervention

A general questionnaire was designed to gather information about risk factors for UI including age, body mass index (BMI), fluid intake, co-morbidities and medications. Relevant co-morbidities and medications were identified based on

prior documented associations with UI [3,13–15]. Categories of relevant co-morbidities were back pain, neurological disorder, arthritis, diabetes, cardiac conditions, hypertension and depression. Categories of relevant medications were antidepressants, narcotics, laxatives, diuretics, analgesics, tranquilisers, blood pressure medications, cardiac medications and anticonvulsants.

Information about disease specific factors, including symptoms (frequency of cough, sputum production and the Modified Medical Research Council dyspnoea score (MMRC) [16]) and severity (most recent spirometry) were also collected. The Hospital Anxiety and Depression Scale (HADS) was used to screen for symptoms of anxiety and depression [17].

For information regarding UI, all participants also completed;

- The International Consultation on Incontinence Modular Questionnaire (ICIQ) Short Form (SF) which is a self-completed, brief and robust measure widely used to assess the frequency and amount of leakage, as well as the overall subjective impact of UI (the extent to which symptoms bother or burden the individual) using a visual analogue scale [18].
- The ICIQ Male Lower Urinary Tract Symptom (ICIQ-MLUTS) questionnaire which is a standard tool developed specifically to evaluate the symptomatology (e.g. voiding, UI) and ‘bothersomeness’ of lower urinary tract problems for the individual [19]. Stress UI is the complaint of involuntary leakage on effort or exertion, or on sneezing or coughing. Urge UI is the complaint of involuntary leakage accompanied by or immediately preceded by urgency; however the symptom of urgency is the complaint of a sudden compelling desire to pass urine which is difficult to defer and is suggestive of lower urinary tract dysfunction [1].

Analysis

All data were analysed using SPSS (v17; IBM Corporation, NY, USA). Descriptive statistics were calculated and are reported as mean percent, standard deviations and range. Differences between the proportions of participants with UI in CF and control groups were examined using the Chi-square statistic. The relationship between presence of UI and respiratory function was examined using independent samples *t*-tests, while the relationship of UI with dyspnoea, cough and HADS score was examined using the Mann–Whitney *U* test.

Assuming a prevalence of UI in men with CF of 16% and a control prevalence of 3% [11] to detect a difference with 80% power with a significance level of $p=0.05$, 79 per group were determined to be required [20].

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