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Bladder Dysfunction in The Elderly

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Bladder Dysfunction in the Elderly

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Introduction

Bladder dysfunction and incontinence are common occurrences in elderly patients. It was suggested in 1987 that more than $8 billion was expended in the USA on incontinence in elderly institutionalized patients (Resnick and Yalla 1987). Many factors may be involved in either of these common problems. In a study of urinary incontinence in an elderly population Verdejo-Bravo et al (1999) found that of 948 patients with incontinence (382 male and 566 female) 56.4% suffered with urge incontinence. Urodynamic studies demonstrated bladder instability in 29.9%, outlet obstruction in 15.6% and stress incontinence in 14%. Post-void residual urine was correlated with the principle diagnosis of obstruction.

The "bladder" is an unreliable witness" (Bates et al) is a time-honoured phrase that sums up the difficulties that we have with understanding the symptoms that may indicate bladder dysfunction. This particular phenomenon has been investigated by Ding et al (1997) in elderly men with persistent urinary symptoms. They discovered residual urine greater than 50ml with high sensitivity and specificity in patients with poor detrusor contractility. Residual urine was less specific in patients with outflow obstruction. They concluded that the bladder "is an unreliable witness".

Residual measurement by ultrasound scanning is a useful method of assessing retained urine volume, however there is a considerable variability in the volume of retained urine in the same patient during any day (Griffiths et al 1996). Residual urine tends to be larger in the morning. The clinical significance of residual urine had not been assessed in a random population until Bonde et al 1996 discovered that a random assessment of residual urine in a population of over 75 year old people in the contractility demonstrated that 99% of males and 92% of

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females had greater than 10ml of residual urine (males: median 90ml; range 10-1502ml, females: median 45ml; range 0-180ml). The larger volumes indicate significant voiding dysfunction and should lead to further investigation.

34% of a group of elderly patients (mean age 82.6 years) studied by Grosshans et al 1993, that were admitted to a geriatric ward had residual urine values greater than 50ml. Although urinary tract infection and renal dysfunction were not seen, there was a strong trend towards an association with incontinence.

Starer and Libow 1988 provide further evidence that elderly patients may carry significant residual urine. Eighteen out of 76 nursing home residents were found to have urine volumes greater than 100ml. Detrusor instability was found in 83% of the subjects. They concluded that residual urine measurement alone is not sufficient to predict bladder dysfunction and should be combined with other information.

Not all elderly men who develop post-surgical retention of urine require a prostatectomy. Anderson and Grant 1991 demonstrated that of 22 elderly men with retention only 5 required prostatectomy. The remainder were able to eventually void with minimal ultrasonographically measured residual urine after a period of intermittent catheterisation. The cause of retention in those that subsequently voided was due to low-pressure low-flow or detrusor failure.

Large residual urine volumes in the elderly however were associated with the likelihood of overflow incontinence (Yu et al 1990).

The Place of Urodynamic Study

The accurate diagnosis of bladder dysfunction prior to treatment is essential in any population group. Urodynamic study is well recognised as the most useful test of filling and bladder function. Multichannel cystometry with or without radiological screening forms the basis of such testing. Simple single channel cystrometry has been suggested as a useful alternative method for bedside testing of bladder function in the elderly (Fonda et al 1993) which only requires a filling catheter and a syringe.

Urodynamic investigation of elderly patients demonstrated that mean residual urine was 195ml (Griffiths et al 1994) though there was variability between residual volumes between urodynamic sessions when the studies were repeated.

Normal flow curves with small residual urine volume (Griffiths et al 1991) are associated with a low incidence of bladder dysfunction. Residual urine measured by ultrasonography correlated well with bladder dysfunction. Residual urine volumes were again greatest in the morning. The most frequent cause of incontinence was bladder instability, which tended to occur at night and was both associated with a higher fluid output at night and greater morning residual urine.

Investigation of the Elderly Patient with Bladder Dysfunction

1) History

2) Clinical examination including pelvic examination

3) Nursing diary

4) Frequency volume/voided chart

5) Measurement of post-void residual

Indications for the measurement of post-void Residual Urine in the Elderly

1) Urinary Incontinence - which may be due to chronic retention with overflow or to bladder instability

2) Symptoms of outflow tract obstruction

3) Urinary tract infection to look for retained residual

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The Role of BladderScan within the Care of the Elderly

Residual urine in elderly patients can be seen to be of major significance in its association with voiding dysfunction, incontinence and the aetiology of urinary tract infection. Thus any ward based non-invasive method that could be used to determine urinary residual could have a major part to play in the management of this patient group. The rapid and simple measurement of residual urine volume could either reassure that a particular patient is voiding completely and thus urinary symptoms could be attributed to a cause other than that related to the imbalance in bladder emptying. A large residual urine measured by scanning should be dealt with by the institution of an appropriate treatment regime. This could include the resolution of bladder outflow obstruction, most commonly found in men, the use of clean intermittent catheterisation for the poorly contractile bladder, or the placement of a suprapubic catheter for long-term drainage in the unfit, incontinent elderly person.

Diagnostic catheterisation is not necessary when ultrasound scanning can be effectively used thus avoiding the physical and emotional trauma that is associated with urethral catheterisation.

Scanning of residual urine is also usefully performed after catheter removal to assess the completeness of bladder emptying and to subsequently reassure that normal bladder emptying is taking place.

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Conclusions

Voiding difficulties and incontinence are frequent occurrences in the elderly. Improvement in quality of life, which has an impact on nursing care and the financial consequences, may be provided by knowledge of the nature of bladder dysfunction. A careful evaluation of urinary symptoms and a measurement of residual urine is often all that is necessary to provide the improvements sought. A ward-based portable ultrasound scanner offers all hospitals the opportunity to improve the quality of life of their elderly patients. The measurement of post-void residual urine in elderly patients is inexpensive, non-invasive and beneficial in the diagnosis of urinary incontinence and voiding difficulty.

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History Proforma for Patients with Bladder Dysfunction

Name: _____ Hosp No. _____ DOB: _____ Age: ___
Address: _____
Postcode: _____ Occupation: _____
Home telephone No. _____ Work telephone No. _____
GP: _____ Referred by: _____
Presenting complaint: _____
Frequency: _____
Nocturia: _____
Urgency: _____
Urge Incontinence: _____
Stress incontinence: _____ Pads: _____
Continuous/unconscious incontinence: _____
Hesitancy: _____
Stream-normal/reduced/interrupted/variable _____
TD/PMD _____
Emptying: _____
Straining: _____
Dysuria/infection/haematuria _____
Pain: renal/bladder/urethral/prostatic/back _____
Sexual function: Frequency _____
Erection: normal/weak/unsustained/none _____
Ejaculation-normal/premature/none/retrograde _____
Past Medical History: _____
Family History: _____
Married/single/divorced/widowed _____
Children: _____
Drugs: _____ Allergies: _____
Examination: _____
Prostate-normal/abnormal/size/ 10/20/30/40/50/60/70/80+ _____
Vagina-normal/rectocele I, II, III/ cystocele I, II, III, IV _____
enterocele/GSI - I, IIa, IIb, III/ atrophy/uterus _____
Diagnosis: _____

_____

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Resnick NM,Yalia SV. Detrusor hyperactivity with impaired contractile function. An unrecognised but common cause of incontinence in elderly patients. JAMA 1987 257: 3076-81

Verdejo-Bravo C, Salinas-Casado J,Viseda-Chamorroe M, Rexach-Cano L et al. Toward a simplified method of classifying urinary incontinence in the elderly based on multivariate analysis of 948 cases. Arch Esp Urol 1999 52(5): 440-450

Ding YY, Lieu PK, Choo PW. Is the bladder an unreliable witness in elderly males with persistent lower urinary tract symptoms? Geriatr Nephrol Urol 1997 7: 17-21

Griffiths DJ, Harrison G, Moore K, McCracken P. Variability of post-void residual urine volume in the elderly. Urol Res 1996 24: 23-26

Bonde HV, Sejr T, Erdmann L, Meyhoff HH et al. Residual urine in 75 year old men and women. A normative population study. ScandJ Urol Nephrol 1996 30: 89-91

Griffiths D, Harrison G, Moore K, McCracken P. Long-term changes in urodynamic studies of voiding in the elderly. Urol Res 1994 22: 235-8

Yu LC, Rohner TJ, Kaltreider DL, Hu TW, Igou JF, Dennis PJ. Profile of urinary incontinent elderly in long term care institutions. J Am Geriatr Soc 1990 38: 433-9

Fonda D, Brimage PJ, D'Astoli M. Simple screening for urinary incontinence in the elderly: a comparison of simple and multichannel cystometry. Urology 1993 42: 536-40

Grosshans C, Passadori Y, Peter B. Urinary retention in the elderly: a study of 100 hospitalised patients. JAm Geriatr Soc 1993 41: 633-8

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Anderson JB, Grant JB. Post-operative retention of urine: a prospective urodynamic study. BMJ 1991 302: 894-6

Starer P, Libow LS. The measurement of residual urine in the evaluation of incontinent nursing home residents. Arch Gerontol Geriatr 1988 7: 75-81

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