URINARY INCONTINENCE IN THE HOSPITALISED ELDERLY – A LARGELY REVERSIBLE DISORDER

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ABSTRACT

A five-month prospective study of urinary incontinence in the elderly was carried out in an acute assessment and rehabilitation geriatric ward to determine the incidence, underlying causes and outcome with management. The incidence in patients 65 years or older was 22%. Of these, 21% had transient incontinence which resolved after the precipitating medical cause was treated. Incontinence was resolved in 36% and improvement obtained in another 20%. Management of urinary incontinence in this population can result in a satisfactory outcome in more than half of patients and is worth pursuing.

Keywords: urinary incontinence, elderly, algorithm, management of urinary incontinence, urodynamics.

INTRODUCTION

The belief that urinary incontinence in the elderly is due to ageing per se is outdated. It is, however, still often thought of as having no useful management options available and hence irreversible when it does occur. The result is that either the problem is ignored or else indwelling catheters or incontinent pads are used as palliative measures without any preliminary assessment. Urinary incontinence can lead to problems which are avoidable. Medically, incontinent patients are predisposed to urinary tract infections, perineal rashes and pressure sores. Psychosocially, embarrassment, rejection by carers and depression may occur. Economically, the financial costs incurred are heavy[1]. Urinary incontinence is often discovered during an acute hospital admission. This occasion is a good opportunity for assessment and appropriate treatment. With all these in mind, a prospective study of urinary incontinence in patients admitted to an acute assessment and rehabilitation geriatric ward was conducted. The aim was to determine the size of the problem and the underlying causes as well as to measure the outcome with management.

METHODS

The study was conducted at an acute assessment and rehabilitation ward of the Department of Geriatric Medicine at the Tan Tock Seng Hospital. This was a 28-bedded (14 male and 14 female) ward. Patients were admitted through the accident and emergency department, outpatient clinic and via consultation referrals from the other medical and surgical departments in the hospital. During a five-month period from March to July 1991, all patients admitted who were 65 years or older and who were found to be incontinent of urine in the ward were entered into the study. For the purpose of the study, urinary incontinence was defined as "at least one episode of objectively-proven inappropriate loss of urine, regardless of amount". The diagnosis was based on the recording of incontinent episodes in the patients' fluid intake and output charts by the nurses. The severity of the incontinence was determined by documenting the number of episodes of incontinence per day at the time of the diagnosis of incontinence.

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Patients using an indwelling urinary catheter or an external collecting device like the penile sheath were also considered as being incontinent of urine where the patient would be wet without the use of these devices.

Once incontinence was identified, an evaluation which included a targeted clinical assessment as well as a few basic investigations was carried out. The history focussed on the frequency of incontinence, urinary symptoms, concurrent drug therapy as well as medical disorders that could contribute to urinary incontinence such as cerebrovascular disease, parkinsonism and diabetes mellitus. Physical examination was performed with special emphasis on the urological and neurological examination. In particular, palpation of the bladder, per rectal examination and gynaecological examination (where appropriate) were performed along with the assessment of the cognitive state and mobility. The basic investigations were a bladder chart into which was recorded each episode of micturition, urine for microscopic examination and a post-voiding residual urine volume obtained by "in-out" catheterisation of the bladder.

Transient causes of incontinence are those which are potentially reversible with treatment and are listed in Table I, using the mnemonic "DIAPPERS" (diapers mis-spelled with an additional "P")[2]. These were initially sought in all incontinent patients and treated, if present. Patients who regained continence after treatment of the identified transient causes were considered as having had transient incontinence. If the incontinence persisted after treatment of the transient causes or if none were present, then the patient was considered as having established incontinence[2]. For patients with established incontinence, empirical treatment as for detrusor overactivity or outlet incompetence was initiated if the clinical features suggested the diagnosis. The presence of detrusor overactivity due to detrusor instability was considered likely when the symptoms of frequency, nocturia, urgency or urge incontinence occurred together[3] or when a typical micturition pattern was documented on the bladder chart. Urodynamic studies were considered in males (because of the possibility of the presence of bladder outlet obstruction), where the post-voiding residual volume was more than 100 ml and where empirical treatment was not successful. If continence was still not achieved, timed or prompted voiding was used, along with appropriate toileting aids (eg urinals and commodes). Palliative measures like urosheaths, pads or indwelling catheters were only considered when everything else had failed. An outline of the management is given in Fig 1.

The outcome of management was determined by comparing the frequency of the incontinence in the 24 to 48 hours prior to discharge with that at the time of diagnosis. If there was no

incontinence just before discharge, then a "cure" was recorded. If the frequency of incontinent episodes just before discharge was less than at diagnosis, then an "improvement" was recorded. With any other outcome (including the use of indwelling catheters and external collecting devices), "no improvement" was recorded.

Table I – Causes of transient incontinence

	No. of patients (n=12)
Delirium	5
Infection (symptomatic UTI)	1
Atrophic vaginitis/urethritis	0
Pharmaceuticals (drugs*)	1**
Psychologic (esp. depression)	2
Excessive urine output (eg hyperglycaemia)	0
Restricted mobility	11
Stool impaction	1

* These include: diuretics, anticholinergics, antidepressants, antipsychotics, sedative/ hypnotics, narcotics, alpha-adrenergic agonists and antagonists, and alcohol.
** Frusemide was the drug in this case.
Note: Some patients had more than one cause occurring together.

Fig 1 – Algorithm of the management of urinary incontinence in the hospitalised elderly
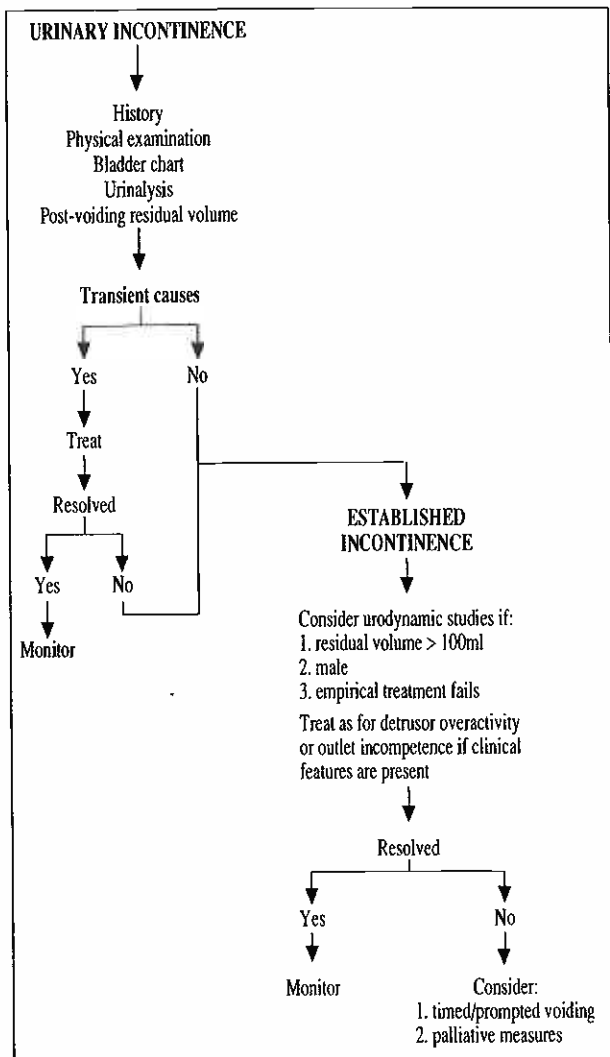
RESULTS

There were 254 (110 male and 144 female) patients aged 65 years or older admitted to the ward during the study period. Of these, 56 (23 males and 33 females) were identified as having urinary incontinence. Hence, the incidence of urinary incontinence was 22.0% (20.9% for males and 22.9% for females) of all the admissions. The mean age of incontinent patients was 78.1 years (76.1 years for males and 79.5 years for females). In none of the patients was urinary incontinence the main reason for admission to the ward. At the time of diagnosis of incontinence, 5 patients had indwelling catheters and 3 had penile sheaths. These 8 patients were truly incontinent of urine although the indwelling catheters were inserted primarily because of medical reasons (eg to monitor urine output).

The duration of incontinence at diagnosis was one month or less in 20 (35.7%), more than one and up to six months in 8 (14.3%), more than six months in 7 (12.5%) and uncertain in 21 patients (37.5%).

Transient incontinence was present in 12 patients (21.4%). The causes are given in Table I. The remaining 44 patients (78.6%) had established incontinence and the causes were given in Table II.

Table II – Causes of established incontinence

Category		No. of patients (n=44)
Lower urinary tract causes	Detrusor overactivity	12*
	Outlet incompetence	0
	Detrusor underactivity	2**
	Outlet obstruction	1***
Functional incontinence		29****

* detrusor instability associated with: cerebrovascular disease - 4 patients; parkinsonism - 3 patients; normal pressure hydrocephalus - 2 patients; idiopathic detrusor instability - 3 patients
** conus medullaris lesion - 1 patient; uncertain aetiology - 1 patient
*** probable prostatic obstruction
**** functional incontinence related to: dementia and poor mobility - 24 patients; poor mobility - 5 patients

Urodynamic studies were only performed in 4 patients (7.4%). In two, detrusor underactivity was demonstrated while one each had detrusor overactivity and outlet obstruction confirmed. Thirty-one incontinent patients who did not achieve continence (excluding the 6 patients who died) did not have urodynamic studies done although empirical treatment had failed, as it was felt that knowledge of the precise diagnosis of the voiding dysfunction present would not alter management, as drug therapy and surgery were not being considered feasible in these patients for one reason or another.

Although cystourethroscopy was indicated in one male patient to confirm the cause of outlet obstruction with a view to performing a transurethral resection of prostate (TURP), the patient and family declined the procedure.

Excluding the 6 patients who died, only two patients needed indwelling catheters. Two patients were discharged with intermittent catheterisation regimens. Three had penile sheaths while another three used incontinent pads on discharge.

Again, excluding the 6 patients who died during the hospital admission, the outcome of management was:

"cure" in 18 patients (36.0%)
"improvement" in 8 patients (16.0%)
"no improvement" in 24 patients (48.0%)

When patients with established incontinence were considered

separately as a sub-group, a "cure" was obtained in 6 (13.6%) and an "improvement" in another 8 (18.2%) patients.

None of the patients with indwelling catheters or penile sheaths at the time of diagnosis achieved a "cure" or "improvement".

The outcome achieved in patients with dementia compared with those without dementia is shown in Table III.

Table III – Comparison of outcome between patients with and without dementia

	Cure	Improve-ment	No improve-ment	Total
Dementia	5 (20.0%)	5 (20.0%)	15 (60.0%)	25 (100.0%)
No dementia	13 (52.0%)	3 (12.0%)	9 (36.0%)	25 (100.0%)

Note: The six patients who died during the admission were excluded.

DISCUSSION

The incidence of urinary incontinence amongst the elderly in the acute care hospital setting has been found to be from 19 to 35% in other studies[4,5]. The finding of 22.0% in our patient population is comparable. As the diagnosis of incontinence depended upon the observation of inappropriate voiding episodes in the ward, there is a possibility that some minor episodes may not have been detected, especially if confused, memory-impaired or aphasic patients did not bring these to the attention of the ward staff. Hence, the actual incidence could even be higher. Certainly, the point is that urinary incontinence is a common problem in the hospitalised elderly and can be expected in at least one out of every five patients.

Different classifications of urinary incontinence in the elderly exist. However, for the purpose of incorporating a classification into a practical approach, we chose one which divides urinary incontinence into two types: transient incontinence and established incontinence[2]. Transient incontinence occurs when it is of acute onset, caused by one or more of the transient causes ("DIAPPERS" in Table I), and resolving after treatment of these precipitating cause(s). Established incontinence is that which persists after treatment of these transient causes or in which none of these causes are present. There are two major categories of established incontinence. They are: lower urinary tract causes and functional incontinence. The lower urinary tract causes can be divided into disorders of storage (detrusor overactivity and outlet incompetence) and disorders of evacuation (detrusor underactivity and outlet obstruction). Functional incontinence is that which is related to severe cognitive impairment, depression, impaired mobility or poor motivation, resulting in inadequate use of appropriate toileting facilities[2]. Most incontinent patients can be placed into the appropriate group of established incontinence after a simple clinical assessment and post-voiding residual urine volume measurement. Thereafter, precise determination of the type of disorder of storage or evacuation requires the guidance of urodynamic studies.

In our study, more than one-fifth of incontinent patients had transient incontinence. Among our patients with established incontinence who could be placed in the relevant diagnostic group, detrusor overactivity (due to detrusor instability) was by far the commonest disorder. Outlet incompetence (stress incontinence) was not diagnosed in any of our patients. The possible reasons for this are that the small amounts of urine loss typical of stress incontinence may not have been detected in the ward and that urodynamic studies which can further increase the detection of stress incontinence were not done in the majority of

patients. A large proportion of patients with established incontinence were grouped under "functional incontinence". This reflected the high incidence of dementia and functional disability seen in our patients. However, it is very likely that in some of these patients, detrusor overactivity (due to detrusor instability) was an important contributing cause, but that a diagnostic history could not be obtained from many of them because of cognitive impairment and that urodynamic studies which can further diagnose detrusor instability were not done in most of them. Certainly, detrusor instability has been found to be the commonest cause of urinary incontinence in the elderly when urodynamic studies were used as the principal diagnostic tool[6,8].

Urodynamic studies encompass several different techniques of evaluation and these includes uroflowmetry, filling and voiding cystometry, sphincter electromyography, urethral pressure profilometry and video urodynamics[9]. The need to use any of these techniques is assessed individually. In general, urodynamic studies are necessary when a precise diagnosis of the cause of the established incontinence is needed to guide management. Its role in demented patients who cannot give a history has not been determined as yet. However, they can be considered where the physician is prepared to use drug therapy and surgery in treatment of the incontinence.

Cystourethroscopy provides direct visualisation of any anatomic pathology of the lower urinary tract. It is important in incontinent patients with sterile haematuria, suprapubic or perineal discomfort[2] as well as in men with outlet obstruction. Under certain circumstances, useful information can be inferred regarding voiding function (eg lack of an anatomically obstructing prostate or urethral stricture)[10].

As mentioned above, the management of urinary incontinence involves the treatment of identified transient causes. While these are being treated, simple measures like providing a urinal or commode, coupled with reminders to use these as well as help with their use, can go a long way in helping to achieve continence. The use of these toileting aids can be continued if the incontinence persists after the transient causes have been addressed. Management of established incontinence depends upon the underlying cause. Detrusor overactivity due to detrusor instability is managed by bladder training and habit retraining in cognitively intact and functionally independent patients. In these therapies, voiding intervals are progressively increased to help increase the bladder capacity, which tends to be low with detrusor instability. Other scheduling regimens include timed voiding (typically every two hours) and prompted voiding. These two regimens are appropriate for patients with impaired cognition as in dementia. Drug therapy is also effective in detrusor instability and the most useful drugs appear to be oxybutynin and imipramine. Outlet incompetence due to genuine stress incontinence can be treated with pelvic floor exercises or surgery. Detrusor underactivity is best managed with intermittent catheterisation. Outlet obstruction due to prostatic obstruction, urethral stricture and utero-vaginal prolapse is best managed surgically, if the patient is an appropriate surgical candidate. Drugs such as alpha-adrenergic antagonists (eg prazosin) also have a role in prostatic obstruction. For patients with functional incontinence, timed or prompted voiding, coupled with the appropriate use of toileting aids should be tried.

Long-term use of palliative measures such as indwelling catheters, penile sheaths and incontinent pads should only be a last resort after attempts at other measures have failed. Leakage of urine can still occur with these measures. In addition, urinary tract infections[11], renal deterioration as well as an increased mortality is associated with the long-term use of the indwelling catheter[12].

More than a third of incontinent patients (36%) achieved

continence on discharge. This compares well with two other studies which appear to have obtained continence in only about 10% and 28% [4,5], when their results are examined. Unfortunately, these two studies did not sub-divide their incontinent patients into the categories of transient and established incontinence, which would have been useful for comparison. In our study, we found that only 32% of the patients with established incontinence achieved continence or an improvement in the continence. This is largely due to the fact that the majority of the patients with established incontinence appeared to have functional incontinence due to dementia and immobility occurring together. It is obviously much more difficult to achieve continence in this group of patients. In all but two of the patients with transient incontinence, specific measures directed at the incontinence like bladder retraining and toileting regimens, as well as measures directed at the cause of the incontinence such as clearing of faecal impaction were needed to achieve continence. These were in addition to the treatment of associated medical problems.

In our study population, 52% of incontinent patients achieved continence or an improvement in the incontinence. Although caution should be exercised in trying to extrapolate these results to other hospitalised elderly patients, it is likely that even better results can be achieved in the typically less disabled elderly patients seen in the general medical wards.

It can be seen from Table III that our patients without dementia had a better outcome compared with those with dementia. This is not surprising since severe cognitive impairment makes the management of incontinence more difficult. However, it can also be seen that 40% of our incontinent patients who had dementia had the incontinence resolved or an improvement. Sixteen percent had transient incontinence and 24% had established incontinence where the incontinence resolved or improved. Hence, the presence of dementia should not exclude patients from active management of the incontinence.

CONCLUSION
In summary:
(1) Urinary incontinence is a common problem in the hospitalised elderly and affects at least one out of every five patients.
(2) It is possible to determine the underlying cause of the incontinence in most patients with a simple clinical assessment.
(3) More than half of incontinent patients can be expected to regain continence or have an improvement of the incontinence. In the majority of these patients, this was achieved only by applying measures other than the specific treatment of a medical illness which precipitated the incontinence.
(4) The decision to use palliative measures such as indwelling catheters, penile sheaths and incontinent pads on a long-term basis should be made only after proper evaluation and careful consideration.
(5) The period of acute hospital admission presents a good opportunity to evaluate urinary incontinence and to initiate treatment.

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