Prevalence and management of urinary incontinence in stroke survivors

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Introduction

Urinary incontinence after stroke is common and is closely associated with a poor outcome and depression in both stroke survivor and carer. Despite the personal, economic and psycho-social costs, research into the management of urinary incontinence in stroke survivors is sparse. The purpose of this review is, therefore, to present current knowledge of the association between urinary incontinence and stroke and its management in order to promote research in this field. We have used the term 'stroke survivor' throughout to include any person who has had a stroke in the past and has come into contact with hospitals and specialist treatment, as well as those living in the community. The term 'stroke patient' is referred to only if that term was used in the original paper.

The neurological relationship between stroke and bladder control

The reported prevalence of urinary incontinence in stroke survivors varies [1], but is 44–69% among people admitted to hospital after stroke [2–4]. Much of this variation may be due to the different definitions used. Not only is the meaning of incontinence not standardized, but data are collected on diverse populations [5–8]. More than 35 years ago Andrews and Nathan [9] suggested that the anteromedial region in the frontal lobe was associated with control of micturition, and further studies have confirmed their findings [10–12]. However, almost all higher centres and spinal ascending neurons send input to the pontine micturition centre [13]. Because of this diversity within the central nervous system of control of micturition, the size of the lesion, and therefore the severity of the stroke affecting any lobe (apart from the occipital), is important in determining whether stroke survivors will be incontinent after their stroke [14, 15]. This is true whichever side of the brain is affected by the stroke [16].

Non-neurological factors which affect urinary incontinence

Although the severity of the stroke, caused by the site and extent of neurological damage, contributes to the likelihood of urinary incontinence [9–12], there are important additional contributing factors, such as the pre-morbid continence state. Information on this is often omitted in reports of prevalence of incontinence post-stroke. For example, 17% of stroke patients in one small, hospital-based study had urinary incontinence before their stroke; 20 (77%) of this group were women [17]. Stroke survivors with pre-morbid urinary incontinence may present differently and have different stroke and urinary treatment outcomes from those who develop incontinence for the first time after their stroke. There may be a more complex inter-relationship between stroke and incontinence which may not be explained by a simple causal model. While the site of the cerebral lesion may directly affect micturition control or its neurological pathways, it may also lead to practical difficulties in bladder control. Causes of this include motor impairment, alteration of consciousness, sensory lesions, ataxia, depression and dysphasia. Any post-stroke disability is further compounded by the pre-stroke morbidity causing difficulties in self-care and independence. Such observations are based on clinical practice...
Types and nature of urinary incontinence associated with stroke

Few reports have used urodynamic studies to investigate the underlying urological dysfunction of urinary incontinence in stroke survivors [1]. Those that have, show that no specific bladder lesion is associated with post-stroke incontinence, although detrusor dysfunction (hyper- or hyporeflexia) is more common than detrusor-sphincter dyssynergia [11, 15]. The place of urodynamic investigations in the assessment of urinary incontinence is no different in stroke survivors than in others with incontinence; it is part of a clinical investigation when the bladder lesion is uncertain. There is unlikely to be further benefit in investigating bladder characteristics with urodynamic studies to ascertain which characteristics are linked to stroke.

It has been suggested that incontinence following stroke is transient [2], based upon the observation that fewer patients are recorded as experiencing urinary incontinence on discharge from hospital than on admission [18]. This apparent difference, however, may simply reflect the numbers of stroke patients who have died while in hospital rather than improvement in continence status. It would be interesting for future research to prove the transient nature of incontinence by following-up stroke survivors, rather than comparing the prevalence of incontinence on admission and on discharge.

Urinary incontinence as a predictor of outcome

Urinary incontinence is a strong predictor of death and poor outcome in terms of mobility, cognition and discharge destination [1]. One study reported that the relative risk of death in stroke survivors quadruples if they are incontinent within the first year after stroke [19]. Another found that incontinent stroke patients were seven times more likely to have died within 6 months than continent patients [3]. Urinary incontinence is also a predictor of poor recovery. For example, the presence of incontinence in first-time stroke survivors under 75 is the best predictor of severe or moderate disability at 3 months [20]. Continence status also influences place of discharge, with more continent than incontinent stroke survivors returning home [20].

Stroke and urinary incontinence are both associated with depression in elderly people [21, 22]. There is, however, little published on the impact of incontinence after stroke on mood. Our study has demonstrated that urinary symptoms (incontinence, urgency, nocturia, frequency) may contribute to self-reported depression in stroke survivors living at home, the rate of report among stroke survivors with urinary symptoms being three times that in the non-stroke, non-symptomatic population [23]. Overall, twice as many stroke survivors with urinary symptoms than non-symptomatic survivors reported depression. Moreover, Barer has reported that stroke outcome is better 6 months post-stroke in those who remain continent or regain continence than in those whose incontinence persists [24]. He also found that the more severe the initial incontinence, the higher the chance of death within the first month, and that continent stroke patients had a greater chance of being discharged to their own home compared with patients who remained incontinent.

Management

There has been little research into how urinary incontinence in stroke survivors may be improved, but methods that are successful in non-stroke participants should be effective. The most important step is to make a clinical diagnosis on which to base specific management: for example, bladder retraining and anticholinergic drugs in stroke survivors with urge incontinence and intermittent clean catheterization in those with retention.

Stroke survivors will benefit from a search for non-urological factors which may exacerbate incontinence, such as oestrogen deficiency in post-menopausal women, polyuria (e.g. due to drugs or glycosuria), constipation, psychological causes (depression and confusion) and immobility. The few studies which have examined the potential benefit of treatment indicate the possible positive effects of treating urinary incontinence on bladder control [25–27]. In two of these studies, transurethral resection of the prostate enabled most participants to control their micturition [25, 27]. Treatment which consisted of drug therapy, surgical intervention, catheterization and bladder training enabled most patients to become continent and positively improved urinary incontinence in a further 38% [26]. More studies are needed, and Barer’s hypothesis that achieving continence or being made socially dry could lead to more favourable stroke outcomes overall needs testing [24]. The impact that this would have on carers also merits investigation.

Although urinary incontinence after stroke is associated with poor outcome, factors predicting early improvements in continence status are rarely mentioned. There is one small study of clamping regimens for catheter removal in acute stroke patients. Using this technique before catheter removal did not affect the incidence of voiding dysfunction after a stroke [28].
While the occurrence and association of urinary incontinence and stroke is well documented, that of faecal incontinence has received less attention. The arguments for urinary incontinence may be as relevant for faecal incontinence in determining prognosis and treatment goals, but there is little evidence on this.

We need to know how improvement of continence status can be achieved and what impact this has on outcome, and we advocate clinical trials into the treatment and management of urinary and faecal incontinence in stroke survivors.

Key points

- Although between 44 and 69% of people admitted to hospital after stroke are incontinent of urine, there has been little research into the association between urinary incontinence and stroke or into the management of incontinence in stroke survivors. Even less is known about the effects of faecal incontinence.

- Non-neurological factors such as the pre-morbid continence state or practical difficulties in bladder control (such as motor impairment, alteration of consciousness, sensory lesions, ataxia, depression and dysphasia) can contribute to the likelihood of post-stroke urinary incontinence.

- Urinary incontinence in this group is a strong predictor of death and poor outcome in terms of mobility, cognition and discharge destination. It is also linked with self-reported depression.

- Methods of managing urinary incontinence in non-stroke subjects should be effective in this group.

References