Quality of care for urinary incontinence in a rehabilitation setting for patients with stroke. Simultaneous monitoring of process and outcome

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Abstract

Objective. To study the quality of care provided for patients with urinary incontinence following a stroke, by monitoring both process and outcome elements of care simultaneously.

Design. Prospective follow-up of patients (of all ages and of both sexes) with urinary incontinence that appeared following a stroke who were admitted for rehabilitation during a six 6-month period.

Setting. A ward for stroke rehabilitation in The Loewenstein Hospital-Rehabilitation Centre in Raanana, Israel.

Results. Thirty-seven patients with stroke and urinary incontinence (mean age 61 years, 68% men) were included in the study; 84% of the 37 patients were discharged, although only 25% of them were continent. No lasting complications of urinary incontinence developed and there was no interference with rehabilitation activities. There was a correlation between incontinence and low score of Functional Independence Measure (FIM) on admission, being higher on discharge in those who became continent than in those who did not.

Conclusions. Ward staff are aware of the potential problem of incontinence in patients with stroke. The problem is identified on admission and accorded adequate attention and care with satisfactory outcomes. The approach of monitoring process and outcome elements of care simultaneously in conditions that, during inpatient rehabilitation of patients with stroke, may endanger life, interfere with rehabilitation and delay functional recovery, could be a useful way to assess and improve the quality of care.

Keywords: complications during rehabilitation, continuous quality improvement, interference with rehabilitation, rehabilitation after stroke, urinary incontinence

The reduction of stroke-related disability is a priority because of the high prevalence of stroke and the socio-economic burden it causes. Consequently, rehabilitation is a significant component in the management of patients with stroke.

Rehabilitation addresses patients who have survived an acute stroke with residual physical, cognitive and/or psychological impairments. The objective of rehabilitation is to allow individuals to return to their usual roles in life after the disruption caused by the stroke. This includes independent living, participation as family members, social activities and work. One major focus in the rehabilitation process is, therefore, 'training for maximum independence' [1]. An additional area of focus is 'preventing, recognising and managing co-morbidity and medical complications' [1].

Medical complications occur in at least 50% of patients with stroke during their inpatient rehabilitation [2]. Of particular importance are conditions that endanger life (such as deep vein thrombosis and pulmonary embolism, dysphagia with aspiration and upper airway obstruction) as well as those that interfere with rehabilitation activities, delay functional recovery and adversely affect the outcome.

One of the latter complications is urinary incontinence,
defined by the International Continence Society as ‘a condition in which involuntary loss of urine is a social or hygiene problem and is objectively demonstrable’ [3]. Patients with urinary incontinence pass urine into their clothing or bedding, or dribble it onto the floor on their way to the toilet; it is an unpleasant, distressing and embarrassing condition. When it occurs in a rehabilitation setting, it may cause loss of rehabilitation therapy time of up to 11 hours weekly per patient and may result in interruption to 24% of rehabilitation therapy sessions [4].

Urinary incontinence occurs in 30–80% of patients following a recent stroke [5–8]. Continence is usually regained spontaneously in the course of recovery from stroke, but 42% of patients at four weeks and 20% at 6 months after the onset may still be incontinent [7]. Analysis of nine studies published between 1985 and 1997 suggests that, at hospital discharge, 25–28% of stroke patients with urinary incontinence are still incontinent and that 12–19% will still experience incontinence some months after a stroke [8]. Urinary incontinence prolongs inpatient rehabilitation and adversely affects its outcome [6–9]; its complications, such as skin breakdown and urinary infection, further hinder and prolong rehabilitation.

Because of its high prevalence after an acute stroke and its unfavourable impact on the rehabilitation outcome, the care of urinary incontinence during inpatient rehabilitation is an important aspect of the rehabilitation process. The staff of an inpatient setting must be aware of the importance of the condition for successful rehabilitation [10]. They must identify the condition on admission and care for it until either continence is regained or the patient discharged, thus minimizing interference with rehabilitation activities and preventing complications of incontinence.

The care of urinary incontinence is thus a significant focus of the quality of care in an inpatient setting for the rehabilitation of patients with stroke. A study was performed to assess and improve the quality of care for urinary incontinence on a ward for stroke rehabilitation and is reported here.

Methods

The study included community dwelling, previously continent persons of all ages and both sexes in whom urinary incontinence appeared following the acute onset of stroke (as defined by The World Health Organization and confirmed by computerized topography or magnetic resonance imaging) and were admitted for rehabilitation consecutively during a 6-month period (10 March–10 September 1996).

Case definition and identification

A registered nurse (TM) followed the study subjects prospectively from admission and monitored them for incontinence during the stay. She assessed them as incontinent based on clinical judgements, interviews with patients and their families and by studying the flow sheet recorded for each patient by the nursing staff. Patients were not assessed as incontinent if they had only occasional accidents (while waiting for bedpan or commode) or if they were incontinent only at night (possibly due to drowsiness or waiting for assistance during the shift with the lowest nursing staff level); such occurrences were rare. The continence status was also re-assessed 6 weeks after admission and on discharge, as well as 6 months after discharge (by telephone with patients and family members). Detailed physical and neurological examinations and Functional Independence Measure (FIM) scores were taken on admission and discharge of all patients [11]. In addition, medical, nursing and therapists records were studied carefully and members of the nursing staff were interviewed.

Data collection methods

FIM is an 18-item, seven-level scale of independent performance in self care, sphincter control, transfers, locomotion, communication and social cognition. The points for each item are added and the possible total score ranges from 18 (lowest level of independence) to 126 (highest level of independence). The 18 items used in FIM may be subdivided into two scales; physical (13 items) and cognitive (five items). Each scale has been converted into measures with Rasch analysis; (a statistical technique that constructs interval measures from ordinal data) and interrater agreement has been good [12].

The quality of care was assessed by studying elements of the process of care (awareness of the condition, its identification on admission and care activities provided) as well as simultaneously studying the outcomes of care (attributable to antecedent process activities) such as interference with rehabilitation, appearance of complications and placement outcomes.

Data analysis

A questionnaire containing all data from this prospective monitoring was completed for each study subject, entered into a computer and analysed with the Statistical Package for the Social Sciences software (SPSS, Israel). Statistical methods were applied according to issue and purpose.

The study was approved by an institutional review board at Loewenstein Hospital and the National Committee for Clinical Trials in Humans. There were no difficulties in obtaining consent and co-operation from patients, families and nursing staff members.

Results

Patient characteristics

Thirty-seven patients fulfilling the criteria were included in the study, representing 24% of the 155 patients with stroke admitted to the ward during the study period. Their mean age was 61 (SD = 9.5) of which whom 68% were male. In 78% of patients, this was their first stroke while 22% had
Quality of care for stroke patients with urinary incontinence

Table 1 Characteristics of patients

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>All patients admitted</th>
<th>Incontinent patients admitted</th>
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<tbody>
<tr>
<td></td>
<td>n = 155</td>
<td>n = 37</td>
</tr>
<tr>
<td>Men</td>
<td>67%</td>
<td>68%</td>
</tr>
<tr>
<td>Mean age (years)</td>
<td>59 (± 10.3)</td>
<td>61 (± 9.5)</td>
</tr>
<tr>
<td>Right hemispheric lesion</td>
<td>49%</td>
<td>51%</td>
</tr>
<tr>
<td>Left hemispheric lesion</td>
<td>51%</td>
<td>49%</td>
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</tbody>
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suffered a stroke previously (Table 1). Patients were admitted, on average, 38 days after the onset of stroke (median = 28 days, SD = 33.0) and in this respect, as well as in age, sex and side of hemispheric lesion, were similar to the 118 continent patients admitted to the ward during the same period.

**Statistical analysis**

There was a correlation between incontinence and patients’ low score on FIM (Pearson’s coefficient of 0.71). All patients had impaired mobility while 40% also had aphasia and 14% a neglect syndrome. The mean stay of incontinent patients was 114 days (median = 104, SD = 46.1), significantly longer (at P<0.05) than that of continent patients (mean = 91, median = 90, SD = 46.8).

Twenty per cent of patients became continent 6 weeks after admission and 25% on discharge. Those who became continent were similar in age and FIM cognitive function to those who remained incontinent, but FIM’s physical function was higher in those who became continent (mean = 68.6, median = 71.0, SD = 16.5) than in those who did not (mean = 36.3, median = 32.0, SD = 16.5); a difference that was found to be statistically significant (Mann–Whitney test). FIM’s physical function was higher on admission in those who became continent (mean = 29.3, median = 27.), SD = 13.4) than in those who did not (20.9, 15.0, 9.7 respectively). This difference was on the border of statistical significance.

**Process of care**

The work system of the ward is described elsewhere [11]. As to activities pertaining to incontinence, the medical and nursing staff are aware of its significance for rehabilitation, identify it on admission and regard it affected by the course of recovery from stroke. Care is initiated on detection of the condition and includes:

(i) promoting continence by placing incontinent patients on the commode or offering them a urinal or bedpan every 2 to 4 hours (during the time they are not having therapy sessions); provision of urinals or bedpans and instruction on their use; explanation on how to reach the toilet and how to improve stability while using it, as well as recommending clothing which is easy to manipulate at the toilet;

(ii) provision of aids and appliances and instruction on their use during hospitalisation and particularly during therapy sessions. In this study, 54% of patients were given Fowley’s condom catheters, 35% were given pants and 11% were given indwelling catheters (women only).

Unlike in spinal lesions, intermittent catheterization is not customary in patients with stroke in our institution; (iii) attention to personal hygiene and keeping dry by educating patients and families in hygiene and prevention of pressure sores.

The general plan of care for patients on the ward entailed systematic determination of continence and post-voiding residual volumes by the nursing staff during the first days after admission. Urinalysis and culture were carried out; if a pelvic disorder was suspected, ultrasound and an intravenous pyelogram were also performed (this was the case in 3% of study patients, but no abnormality was detected). The plan of care for incontinent patients was not documented in medical or nursing records, or by rehabilitation therapists who considered such information confidential. Thus, there was no integrative approach for care of incontinence between therapists and nursing staff.

These two findings needed to be corrected in order to enhance the multidisciplinary intervention in caring for patients with urinary incontinence after stroke; The aim was for nursing staff and therapists to work towards the same goals resulting in better understanding and the planning of an individually tailored training programme for achieving independence [10].

**Outcome of care**

**Complications**

Sixty-one per cent of study subjects had urinary infection (this was already present at admission in 17% of these subjects), which was detected early and responded well to treatment. Twenty-two per cent of the subjects had skin irritations and excoriations (present at admission in 18%), which were detected early and treated; no pressure sores developed.

**Rehabilitation activities**

There was no loss of therapy time or interruption of therapy sessions due to incontinence in study subjects.

**Placement outcome**

Eighty-four per cent of study subjects were discharged home,
of whom 25% were continent at discharge. Telephone follow-up 6 months after discharge showed that they were all living at home and that 55% were continent (using the same definition of incontinence as during the stay in hospital).

Discussion

Several factors may contribute to the appearance of urinary incontinence following an acute stroke: (i) impairment of neurological micturition control mechanisms resulting in hyper-reflexia of the bladder or detrusor sphincter dyssynergia; (ii) bladder hypo-reflexia from 'cerebral shock'; (iii) pre-morbid structural changes in the urinary tract or neuropathic changes; and (iv) post-stroke impairments in mobility, communication and awareness [5,6,8].

We have not investigated the exact cause of urinary incontinence in our study subjects (except for excluding pre-morbid changes in patients suspected of having them), nor have we studied, on this occasion, the association of the condition with the site, location or size of the hemispheric lesion or with specific cognitive impairments as we reported previously [13,14]. This was regarded as being beyond the purpose of the present study.

On admission, 26% of the study subjects had urinary incontinence because of their inability to get to or use the toilet due to poor mobility, difficulty in manipulating clothing and/or cognitive impairment ('functional incontinence' [15]). A further 20% were unable to obtain assistance or reach the toilet in time due to an extreme urgency to urinate and/or inadequate control to inhibit bladder contraction ('urge incontinence' [15]) and in 52% of patients there was a combination of these causes [15]. All subjects had mobility difficulties and overall functional impairment (FIM score); the admission physical FIM score was higher for those who became continent and their discharge physical FIM score was higher than for those who remained incontinent.

Patients with incontinence were given adequate attention and care consisting of appropriate education and instruction as well as support with aids and appliances. Care was adaptive based upon patients’ progress and conformed to planned criteria. The care was aimed at the prevention of complications and minimization of interference with rehabilitation therapies; intermittent catheterization and treatment with anti-cholinergic medications were not practised.

Outcomes of this care were judged satisfactory; urinary infections and skin breakdown were detected early and treated and no serious complications occurred; furthermore, there was no interference with rehabilitation therapies and the longer stay of patients with incontinence was most probably due to their low FIM score. The placement outcome was satisfactory; in another study [6], 61% of the patients who remained continent were transferred to nursing homes (compared to 18% of those who were continent); 54% of our subjects returned home, only 25% of them continent and on a follow-up 6 months after discharge, all were living at home with 55% of them being continent. This may indicate that patients and families were given the competence and confidence to cope with the condition and may allow an inference about the quality of care on the ward.

The study consisted of simultaneous monitoring of process and outcome elements [16]. Unwanted outcomes, identified by the nurse who monitored the elements, were discussed at the time with the head of the ward (RH) and the nurse in charge and the process of care was reviewed. If deficiencies in the process were detected, structural features that may have contributed to them were studied. This sequence of activities resulted in corrections to the process and ongoing quality improvement. The aim was to reduce the occurrence of complications of incontinence and to minimize its interference with rehabilitation. This approach may be applied to other conditions that, during inpatient rehabilitation of patients with stroke, may endanger life, interfere with rehabilitation and delay functional recovery. Such conditions are deep vein thrombosis and pulmonary embolism, aspiration with upper airway obstruction and bronchopneumonia, contractures, pressure sores and others. The described approach, applied to various topics in the different phases of rehabilitation of patients with stroke, could be a useful way to assess and improve the quality of patient care [17].

Conclusion

Urinary incontinence in patients following stroke is a common condition that may interfere with rehabilitation and adversely affect functional recovery and outcome. In a rehabilitation inpatient setting, incontinence requires care aimed at preventing complications and minimizing interference with rehabilitation until continence is regained in the course of recovery or until discharge.

This study describes simultaneous monitoring of process and outcome elements of such care, an approach that enabled continuous corrective intervention and may be useful in quality of care assessment and improvement.

References

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