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Title (type in CAPITAL LETTERS, leave one blank line before the text) BLADDER BEHAVIOUR IN SPINAL CORD INJURY PATIENTS WITH INDWELLING CATHETERS ON CONTINUOUS DRAINAGE- CORRELATION WITH MEDIUM FILL CYSTOMETRY AND UPPER URINARY TRACT CHANGES Introduction: Permanent indwelling catheterisation is widely used for the management of the spinal cord injury patients. The convenience of the catheter is offset by complications such as urinary tract infection, catheter blockages and catheter bypassing, renal scarring and a possible risk of bladder carcinoma. A previous study demonstrated phasic bladder contractions in some spinal cord injured patients even when an indwelling catheter remains on free drainage (1). Furthermore, presence of such contractions was associated with renal damage in the form of scarring in particular. Aims: 1. To study detrusor function in catheterised spinal cord injured patients while the catheter is on free drainage. 2. To correlate the results of medium fill cystometry in these patients with the presence or absence of phasic bladder activity during natural bladder filling with a free-draining catheter. 3. To identify the patients with upper tract changes and relate these to bladder behaviour. Methods: The study group comprised 18 spinal cord injury patients who had been managed with indwelling catheters for at least 4 years (mean age 45 years; range 21 to 70). Twelve of these subjects had urethral catheters while the remainder had suprapubic catheters. Spinal cord lesions were in thoracic region in 10 patients and cervical in 8. All patients underwent natural fill cystometry for a mean period of 218 minutes (range 180 to 250) with their catheters on free drainage. This was followed by a medium fill cystometry at the rate of 40 mls per minute. Patients also underwent an ultrasound scan to assess the kidneys.

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Results:

Natural fill cystometry: Eight patients showed hyperreflexia on free drainage. Four of these patients had pericatheter leakage immediately following these contractions.

	Mean	Range
Resting intravesical pressure (cm of water)	25	8-40
Maximum detrusor pressure (cm of water)	46	25-60
Duration of detrusor contraction (seconds)	51	16-100

Medium fill cystometry: Hyperreflexia was demonstrated in 9 patients and 4 of them had pericatheter leakage following hyperreflexia.

	Mean	Range
Maximum detrusor pressure (cm of water)	62	25-100
Duration of detrusor contraction (seconds)	54	10-120
Compliance	17	3-30
Cystometric capacity (mls)	260	100-600

Of the eight patients with hyperreflexia on natural fill with free drainage of the catheter, 6 had hyperreflexia on medium fill cystometry as well. The mean compliance values for those eight patients with hyperreflexia was 19 and for the ten without hyperreflexia was 15. There was no significant difference.

Upper tract changes: Six patients had upper tract changes, mainly in the form of cortical scarring. Among these, 5 patients exhibited phasic contractions while catheterised and on free drainage. There was statistically significant correlation between scarring and the presence of these contractions (p value: 0.32; Fisher's exact test).

Conclusions: Although permanent indwelling catheterisation is a convenient option of management of spinal injury patient, it is not without complications. Phasic contractions can occur despite the bladder being kept on free drainage leading to pericatheter leakage. These patients can be identified clinically by frequent pericatheter leakage and Urodynamically by phasic contractions on medium fill cystometry. This study also shows correlation between the presence of phasic detrusor contractions during catheterisation and renal scarring. It is possible that detrusor contractions lead to a temporary impairment of ureteric drainage (with or without V-U reflux) and this enables intra-renal sepsis to develop in face of the chronic bacteriuria of catheterised patients. Whether these patients would benefit from anticholinergic drugs remains to be studied.

Reference:

1. Jamil, F et al. Natural-fill Urodynamics in chronically catheterised patients with spinal injury. BJU International 1999, 83: 396-399.

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