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Title: LONG TERM FOLLOW UP OF BLADDER MANAGEMENT IN SPINAL CORD INJURY PATIENTS: EFFICACY AND TOLERABILITY OF CONVENTIONAL TREATMENT.

Aims of Study:

The goals of urological management in spinal cord injury (SCI) patients are to allow complete bladder emptying, to restore urinary continence and to preserve upper urinary tract (UUT) function. After evaluation the initial treatment is usually based on oral anticholinergics and clean intermittent catheterization (CIC). Although successfully used in the majority of patients, anticholinergics have disagreeable side effects causing some patients to abandon them.. Others who do not respond to oral therapy could be successfully treated with intravesical oxybutinin, but there are patients who do not respond to either of the above treatments. We evaluated the efficacy and safety of long term treatment with anticholinergic drugs and CIC in a group of SCI patients and the incidence of UUT complications at presentation and during follow-up.

Methods:

Fifty males and 12 females referring to our rehabilitation hospital as outpatients, were retrospectively reviewed. Initial evaluation included history and neuro-urological examination, urodynamics, renal and bladder ultrasound and voiding cystourethrography. Treatment guidelines included anticholinergics (oxybutynin *per os*) with or without CIC for patients with detrusor hyperreflexia and CIC alone for patients with areflexia. Follow up consisted of neurourological examination, renal and bladder imaging, urodynamics and serum creatinine and urinalyses at least once a year.

Results:

Clinical results:

mean age was 35.8 ± 10.2 years (range 19-75); mean disease duration was 140 ± 57.6 months (range 1-420). Twenty one patients voided by means of suprapubic percussion, 6 patients by means of abdominal straining, 30 patients performed CIC, 3 had an indwelling catheter and 2 a suprapubic tube. Forty seven patients (73.4%) complained of urinary incontinence; 15 cases had a history of recurrent urinary tract infections (UTIs).

Urodynamic results: 47 patients showed detrusor hyperreflexia (36 with detrusor sphincter dyssynergia), 15 bladder areflexia and 4 poor bladder compliance.

Urinary tract imaging:

detrusor hypertrophy was seen in 17 cases, vesico-urethral reflux in 3 (bilateral and complete in 1), urethral diverticula in 2. We did not observe any impairment of renal function.

Follow up: mean follow up was 39.8 ± 38.5 months (range 24-85). Nine (14.5%) patients, 7 with hyperreflexia and 2 with areflexia, abandoned CIC and returned to void with previous modalities. Ten (16.1%) patients with detrusor hyperreflexia discontinued anticholinergics because of intolerable side effects and performed only CIC. In 19 (30.6%) compliant patients oral oxybutinin resulted not effective in improving continence. The remaining 14 (22.5%) patients performed the initially proposed treatment.

Urodynamic improvement, as increase of bladder capacity and of uninhibited detrusor contraction threshold, and decrease of uninhibited contraction amplitude, was observed in 14 (22.5%) patients, although only 4 (6%) achieved detrusor pharmacological areflexia. Twenty (32.2%) patients experienced recurrent UTI (more than 2 infections / years). It is worth noting that patients who started therapy soon after injury showed better clinical and urodynamic responses. Nineteen patients were followed up to 7 years: 9 of them showed clinical and urodynamic amelioration. Four of the remaining patients performed several treatment modalities (oral oxybutynin and propantheline, oxybutynin intravesical instillation, capsaicin intravesical instillation) without reporting any significant improvement.

Conclusions:

Long term conventional urological treatment in SCI patients shows several problems. Anticholinergic had troublesome side effects in a large number of patients so that doses were insufficient to restore continence. Only in patients who started the treatment soon after injury it induced significant clinical and urodynamic improvement. Lower urinary tract dysfunction, if not well treated, produces several complications (recurrent UTIs, bladder wall fibrosis, reduction in the number of receptors), which make the detrusor muscle resistant to the conservative therapy applied. As SCI patients have a lifelong impairment of vesico-sphincter function, we retain that more selective drugs or alternative treatments now available might be used for a successful conservative long term treatment.