

EFFECT OF NOCTURNAL URINARY DRAINAGE FOR TREATMENT OF BLADDER DETERIORATION IN PATIENTS WITH NEUROPATHIC BLADDER DYSFUNCTION

Aims of Study

Some patients with spina bifida and neuropathic bladder dysfunction suffer progressive deterioration of vesicular function and subsequent adverse effects on the upper urinary tract, though they have been regularly undergoing intermittent urinary catheterization, using anticholinergic agents per os / intravesicular, and moisture restriction. Nocturnal polyuria and excessive distension of the bladder is frequently found among these patients by careful recording of frequency-volume charts at urination and /or With great attention to nocturnal polyuria, this study was performed to evaluate the effect of nocturnal continuous urinary drainage on the deterioration of function of the lower and upper urinary tracts.

Methods

Among patients with spina bifida treated by intermittent urinary catheterization for management of neuropathic vesicular dysfunction, four patients (age: 12-28, 2 males and 2 females) with nocturnal polyuria and deteriorating function in the lower and / or upper urinary tracts underwent nocturnal continuous urinary drainage as well as diurnal intermittent catheterization. Vesicular function and urinary tract anatomy were precisely evaluated with conventional urodynamic and radiological (excretory urography, voiding cystography) study. Continuous nocturnal monitoring of detrusor pressure was also performed in two patients. Voided plus drained volume of urine (mean: 600ml, range: 400-1100ml) on waking in the morning was above maximum cystometric capacity (mean: 200ml, range: 150-300ml) in all patients. Only one patient had vesicoureteral reflux (VUR) grade4. Nocturnal continuous drainage was performed with fully informed consent. A specially designed bag catheter (intermittent balloon catheter, DIB Co.Ttd., Tokyo, Japan) was used for repetitive nocturnal indwelling catheterization. Since all patients were experienced in self-catheterization, indwelling and withdrawing of catheters was managed by them. Urodynamic study and radiological examination were repeated after continuous nocturnal drainage for more than three months and the effect of treatment was evaluated.

Results

High-grade VUR disappeared in one patient after treatment. Three patients exhibited improvement in detrusor compliance (before mean 6.4 ml/cmH₂O, range:5-7.5 ml/cmH₂O, after mean 13.3 ml/cmH₂O, range:10-20 ml/cmH₂O) and vesicular deformity. No patients had increased frequency of urinary tract infection. Nocturnal continuous monitoring of detrusor pressure, performed in two patients, revealed involuntary detrusor contractions not revealed by conventional water cystometry.

Conclusions

In patients with neuropathic vesicular dysfunction, special attention should be paid to the nocturnal volume of urine. Considerable overloading of the bladder with urine during sleep might be one of the causes of poor compliance bladder and deterioration of upper urinary tract function. Furthermore, involuntary detrusor contraction, undetected with conventional cystometry, might emerge and increase deterioration of lower and upper urinary tract function. Continuous urinary drainage with an indwelling catheter during sleep not only prevents excessive distension of the bladder and deterioration of urinary tract function, but also reverses deterioration of function and deformity of the urinary tract. It also frees patients from unpleasant bed-wetting and moisture restriction.