

EARLY APPLICATION OF CLEAN INTERMITTENT CATHETERIZATION IN CHILDREN WITH NEUROGENIC BLADDER

Hypothesis / aims of study

To investigate the effect of early application of clean intermittent catheterization(CIC) in children with neurogenic bladder(NB).

Study design, materials and methods

A retrospective analysis was carried out in sixty-four infants with NB diagnosed in our hospital. All patients were divided into early CIC group(less than 1 year old children) and late CIC group (more than 3 years old children) according to the treatment time. The indication of CIC is voiding difficult and significant increase in residual. Early CIC group included 29 patients whose ages ranged from 4-11 months (19 boys and 10 girls with the mean age of 7.5 ± 2.8 months). Including 4 cases were suffering from postoperative spina bifida manifesta, 22 spina bifida occulta, 2 sacral dysplasia, 1 meningitis. Late CIC group included 35 cases whose ages ranged from 5-11 months (20 boys and 15 girls with the mean age of 8.0 ± 2.9 months).Including 2 cases were suffering from postoperative spina bifida manifesta, 28 spina bifida occulta, 4 sacral dysplasia; 1 postoperative pelvic surgery. Before the treatment, there were no significant difference of the bladder compliance (BC), the maximum cystometric capacity (MCC) and the safety bladder capacity (SBC) between two groups. Urodynamic parameters and complications of 64 patients who were successfully followed up for 6 years were compared.

Results

After 3 years follow up, BC, SBC and MCC [(8.5 ± 1.9) ml/cmH₂O, (140 ± 25) ml, (142 ± 29) ml] in early CIC group were significantly higher than those in late CIC group [(7.0 ± 2.2) ml/cmH₂O, (110 ± 31) ml, (120 ± 28) ml; $P < 0.05$]. After 6 years follow up, BC, SBC and MCC [(12.0 ± 2.5) ml/cmH₂O, (210 ± 26) ml, (230 ± 30) ml] in early group were significantly higher than those in late group [(9.3 ± 2.3) ml/cmH₂O, (192 ± 31) ml, (205 ± 35) ml; $P < 0.05$], the number of vesicoureteral reflux in early group was significantly less than that in late group ($P < 0.05$). Increases in BUN and serum creatinine were found in 6 cases (20.7%) in early and 17 cases (48.6%) in late treatment group, the difference was significant ($P < 0.05$).

Interpretation of results

After 3 years follow up, BC, MCC and SBC in early group were significantly higher in early than those of late CIC group. The results indicated that CIC had a significant effect on the treatment of NB. After 6 years follow up, BC, MCC and SBC in early group were also significantly higher than those of late CIC group. It shows that the improvement of urodynamic parameters in early CIC treatment is better than that of late CIC. The normal compliance of children was generally greater than 20ml/cmH₂O, and the two groups were less than 10ml/cmH₂O before treatment. The early CIC group was closer to the normal result after treatment. We believe that the application of CIC can improve the urodynamic parameters of NB patients. Although there is still a gap compared with normal same age children, but the early application of CIC can improve bladder function and reduce the gap with the normal same age children.

The results indicated that there was no significant difference in the number of increases in BUN and serum creatinine between two groups after 3 years follow up, but the number of vesicoureteral reflux in early CIC group was significantly less than that in late CIC group. It shown that CIC can prevent or relieve the incidence of VUR with NB children. After 6 years follow up, the number of increases in BUN and serum creatinine, vesicoureteral reflux in early CIC group was significantly less than that in late CIC group. This may be because of the late application of CIC children, bladder was under high pressure in a long time, resulting in bladder wall ischemia, bladder fibrosis, decreasing of bladder compliance, declining of bladder contraction, increasing of PVR, and aggravating of VUR, leading to decline in renal function. The early application of CIC can evacuate bladder residual urine in time to make bladder in a safe pressure, to prevent or slow down the process of bladder fibrosis, to improve the VUR, to protect the upper urinary tract function effectively.

Concluding message

For NB patients, the effect of early CIC is better than that of late CIC.

Disclosures

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