

THE MOST RELEVANT PARAMETER TO RENAL DAMAGE IN THE PATIENTS WITH SPINA BIFIDA

Hypothesis / aims of study

Although involuntary detrusor contraction is frequently found in the patients with spina bifida, anticholinergics and clean intermittent catheterization prevent renal injury. However, small portion of our spina bifida clinic patients have renal scar. We tried to find out the most relevant parameter which is related to renal damage in spina bifida patients.

Study design, materials and methods

A total of 372 patients with spina bifida (136 myelomeningocele, 236 lipomyelomeningocele) (M:F 211:161) were included for evaluating renal damage. Among them one hundred and sixty-one patients were more than 12 years old (age range 0-36 years old). Videourodynamic study was performed in all and detrusor overactivity was found in 212 patients. Through ^{99m}Tc DMSA study, kidney ultrasonography and serum creatinine level, we judged renal damage. And we examined the incidence of renal damage related to the videourodynamic parameters, such as involuntary detrusor contraction, compliance, vesicoureteral reflux (VUR), maximum urethral closure pressure (40 cmH₂O) and the age at visit to spina bifida clinic. Chi-square test was used for univariate statistical analysis.

Results

Renal damage was found in 71 (19%) out of total 372 patients. Forty-five (21%) out of 212 patients with detrusor overactivity had renal damage. Twenty six (16%) out of 160 patients who had not detrusor overactivity also had renal damage. Therefore, the detrusor overactivity was not to be found significantly related to the renal damage ($p=0.227$). Among the other parameters, VUR is the most significant parameter related to the renal damage in spina bifida patients ($p<0.001$). Actually 71% (42 out of 59 patients) of the patients with VUR had renal damage. On the other hand, 9% of patients with no VUR (29 out of 313 patients) had renal damage. Compliance ($p<0.001$) and the patient's age (more than one year old) at visit to clinic ($p=0.001$) also significantly related to renal damage. Maximum urethral closure pressure was not to be found a significant parameter related to renal damage ($p=0.170$).

Interpretation of results

VUR and low compliance are significantly predictive factors for renal damage in the patients with spina bifida. Late visit to spina bifida clinic also resulted in significant renal damage.

Concluding message

VUR and low compliance are significantly relevant parameters to the development of renal damage in the patients with spina bifida. To prevent renal damage in the spina bifida patients, strenuous efforts to treat VUR and low compliance is needed. Early evaluation and close follow-up is also needed.

References

- J Urol 2003;169:305-8
- BJU Int 1999;84:679-82
- J Urol 1992;147:413-5

FUNDING: No

CLINICAL TRIAL REGISTRATION: This clinical trial has not yet been registered in a public clinical trials registry.

HUMAN SUBJECTS: This study did not need ethical approval because retrospective clinical study but followed the Declaration of Helsinki Informed consent was obtained from the patients.