

CLINICAL VALUE OF MRI IN SPINA BIFIDA OCCULT PATIENTS WITH NEUROGENIC BLADDER AND BOWEL TREATED BY THE ARTIFICIAL REFLEX ARC

Hypothesis / aims of study

To explore the Magnetic Resonance Imaging (MRI) clinical value by comparing MRI pre- and post-operative changes in spina bifida occult patients with neurogenic bladder and bowel treated with the artificial somatic-central nervous system-autonomic reflex pathway procedure (abbreviation: artificial reflex arc).

Study design, materials and methods

From 2000 to September 2004, 67 cases of spina bifida occult with neurogenic bladder and bowel with the history of newborn meningocele repair operation was treated with an artificial somatic-central nervous system-autonomic reflex pathway procedure to gain bladder & bowel control. MRI and urodynamic examination were performed, during the pre-operative preparation and post-operative followup, focusing on the local anatomy of operating field.

Results

Pre-operative MRI evaluation, all 67 cases exhibited the post-operation changes, 6 patients had meningomyelocele, 27 patients had lipid disease of terminal conus, 12 patients had lipid disease of terminal conus and thick filum together, 12 patients had tightened thick filum, 10 patients had operation scar adhesion of cauda equine, all these changes were confirmed by our operation findings. Pre-operative urodynamic tests showed that 46 patients had areflexia and 21 had hyperreflexic/DESD neurogenic bladder. The first 20 patients had followed-up with urodynamics for over 2 years, in which 17 patients gained bladder control after the artificial reflex arc operation 8 to 12 months. Meanwhile, post-operative MRI were studied in 13 patients. Among them, 10 cases who gained bladder control showed no remarkable. Three failed cases showed aggressive tethered cord changes.

Interpretation of results

Bladder and bowel dysfunction in spina bifida patients represent a major medical and social dilemma without a definitive solution. The artificial somatic-central nervous system-autonomic reflex pathway procedure has been established as an effective and safe treatment to restore bladder and bowel continence and reverse the bladder dysfunction for the patients with spina bifida or spinal cord injury [1, 2, 3].

To our knowledge, this is the first time to evaluate the clinical value of MRI by comparing the pre- and post-operation MRI changes in the spina bifida occult patients treated with artificial reflex arc operation, while the urodynamic procedures as a functional diagnosis and received major parameter during followup.

We found that the pre- and post-operative MRI of the 10 cases who gained the bladder control exhibits no remarkable difference. The MRI do also have the similar important value as its performance in pre-operative diagnosis to identify the causes for failed cases among the diversity failed reason, such as the nerve agenesis, bladder detrusor fibrosis, technological errors, etc.

Concluding message

In the clinical practice of treating the spina bifida occult patients with neurogenic bladder and bowel with an artificial reflex arc, MRI has significant value in pre-operative preparation, and also in post-operative followup to identify the causes for failed cases.

After all, this is only our initial report, further research, more cases are still needed to verify the results.

Reference

- 1 An artificial somatic-autonomic reflex pathway for controllable micturition after SCI: Preliminary results of 15 patients. J. Urol.170:1237-1241, 2003
- 2 An Artificial Somatic-Autonomic Reflex Pathway Procedure for Spina Bifida Children to Gain Bladder Control. J.Urol.171:4 211A, 2004.
- 3 An Artificial Somatic-Autonomic Reflex Pathway Procedure for Bladder Control in Children with Spina Bifida. J.Urol.June, 2005. Accepted, In Press.

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