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THE VOIDING FUNCTION OF DOWN SYNDROME

Hypothesis / aims of study

It is well known to arise the genitourinary anomaly in down syndrome[1]. Aged-related cholinergic deficiency in brain is also known in down syndrome[2]. Cholinergic innervation is one of the important regulations in the voiding function. This phenomenon may cause to the voiding dysfunction. However, it is little known of voiding function in down syndrome. In this study, the voiding function in down syndrome was examined.

Study design, materials and methods

Seventy-four patients, 36 women and 38 men with down syndrome were enrolled to in this study. Their parents were agreed with their examination for voiding function. They were 2 year old to 39 year old (mean aged: 15.3 years). We investigated the frequency volume chart for 3 days, uroflowmetry, residual urine volume, urinalysis and their history of voiding status. We divided them into three groups: younger than 10 year old (23 patients), 10-15 year old (14 patients), older than 15 year old (37 patients) and analyzed them.

Results

In their voiding history, 52 patients (70.3%) have normal bladder sensation and 10 patients (13.5%) have reduced bladder sensation. Seventeen patients (23%) presented urinary incontinence, and many of them are urge urinary incontinence because they store too much urine. Figure 1 shows the incidence of urinary incontinence. In older than 15 year, urinary incontinence was significantly diminished more than younger patients. Conversely, younger than 15 years patients had no residual urine, 16.2% of patients in older than 15 years had significant residual urine. Twenty four-hour frequency was decreased and mean voided volume was increased in older than 15 years patients. In 40 of 74 patients, uroflowmetry could be examined. Maximum flow rate and average flow rate in 10-15 years patients increased than younger than 10 years patients. However, maximum flow rate and average flow rate were decreased in older than 15years (Figure 2). Twenty nine patients (72.5%) presented abnormal flow pattern. These abnormal flow patterns were shown to straining to void.

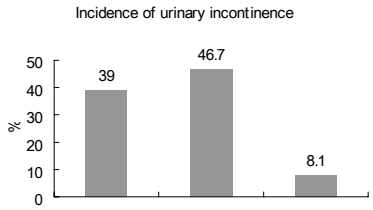

Figure 1

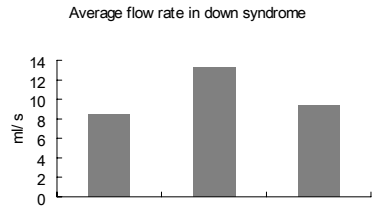

Figure 2

Interpretation of results

As aging, down syndrome patients tend to decrease of 24-hour frequency and flow rate, increase of residual urine volume. They trend to store urine too much and result to detrusor underactivity finally. We consider that cholinergic deficiency in brain may contribute to the voiding dysfunction in down syndrome. It is suggested that drug therapy or timed void is useful for the management of void in patients with down syndrome.

Concluding message

Many down syndrome patients appeared to the voiding dysfunction. It is considered that they should be examined about voiding function regularly.

References

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2. Casanova MF, Walker LC, Whitehouse PJ et al. Abnormalities of the nucleus basalis in Down's syndrome. Ann Neurol 1983;18:310-313

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