

TITLE: Abnormal Urodynamic Finding in Monosymptomatic Nocturnal Enuresis.

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Conflict of interest statement:

No conflict of interest to declare

List of abbreviations:

MNE	Monosymptomatic nocturnal enuresis
NMNE	Non-monosymptomatic nocturnal enuresis
ICS	International continence society
UDS	Urodynamic study

ABSTRACT

Objectives: To assess the bladder function in patients with monosymptomatic nocturnal enuresis (MNE)

Material and methods: Data was collected from 42 patients with MNE who were referred for urodynamic evaluation at urology department, Sohag University. History and physical examination were done and cystometrogram done for all patients according to International Continence Society Guidelines (ICS).

Results: Urodynamic study was done for 42 patients with MNE, 27 of them were females (64.5%) and 15 males (35.5%). Abnormal cystometric findings was detected in the form of detrusor overactivity in 52.5% and abnormal bladder sensations in 24% of patients

Conclusion: Detrusor overactivity and overactive bladder was detected in more than 50% of MNE. This suggests that overactive bladder play a role in the pathogenesis of MNE and antimuscarinic drugs could be offered as a standard treatment.

KEYWORDS: Nocturnal enuresis, Overactive bladder, Detrusor overactivity, Urodynamic study.

Introduction

Nocturnal involuntary wetting or nocturnal enuresis is a common problem in children. It is the second common childhood disease after bronchial asthma. It is estimated to affect about 15% of children aged 5 years [1]. It is a troubling issue for family and children in spite of its spontaneous cure in a rate of 15% yearly [2].

Nocturnal enuresis can be primary when it starts since childhood or secondary where there is a period of control more than 6 months. Mono-symptomatic Nocturnal (MNE) enuresis is defined as nocturnal enuresis with out diurnal symptoms. When it is associated with increased diurnal frequency or voiding problem, it is non-monosymptomatic nocturnal enuresis (NMNE) [3].

The exact aetiology of MNE is still unknown. It may be unbalance between the nocturnal urine formation and functional bladder capacity at night. Others assume that it is due to arousal defects [4, 5].

Bladder overactivity is associated with some cases of NMNE and to little extent with MNE. Urodynamic study is used for the diagnosis of detrusor overactivity. However, it is not a standard test in cases of MNE because of its cost, invasive nature and the rarity of abnormal urodynamic finding in cases of MNE [6].

In our study we reported the urodynamic finding of cases of resistant MNE which could play a role in pathogenesis and diagnosis of these cases.

PATIENTS AND METHOD

We retrospectively collected and analysed the results of urodynamic study for all patients referred to urodynamic unit of Sohag university Hospital.

The aim of the study is to report the abnormal urodynamic findings in patients with Monosymptomatic nocturnal enuresis. We reported the filling cystometry parameters (sensations, cystometric capacity, bladder compliance and detrusor overactivity) and voiding cystometry parameters as (Maximum flow rate, voided volume and residual urine).

After Initial evaluation of patients by history and examination, urodynamic study was performed according to ICS practice guidelines. Six French urethral catheter and rectal balloon catheters were inserted. Medium filling of bladder (50 ml/minute) was done using sterile saline solution with room temperature.

Data was Collected in Excel sheet. For quantitative values (Age, cystometric capacity, voided volume, maximum flow rate and post void residual urine) mean \pm Standard deviation used for presentation. In qualitative data we used number and percentage.

Results

Baseline characteristics:

Urodynamic study was done for 54 patients with resistant nocturnal enuresis from October2016 to October2017. Six patients were secondary NE and six were NMNE thus were excluded from the analysis. We analysed 42 patients with MNE. 27 were females (64.5%) and 15 males (35.5%). The mean age was 15 ± 4.5 years with range (6 – 29) years (Table 1).

Filling Cystometric findings:

Bladder sensations was abnormally increased in 10 patients (24%). Overactive detrusor contractions were detected in 22 patients (52.5%). Bladder compliance was reduced in 5 patients (12%) and cystometric capacity was 330 ± 106 ml (table1).

Voiding Cystometry findings:

Most of our patients voided till completion was insignificant residual urine and normal voiding pattern except two of them who had obstructed voiding pattern. Maximum flow rate (Q-Max) was 18.5 ± 9 ml/sec. Voided volume was 314 ± 105 ml and the mean post micturition residual urine was 13 ml (range: 0 -50 ml) (Table 1).

Discussion

Children with nocturnal enuresis and lower urinary tract affection have marked affection in their quality of life and the development of self-esteem. The aetiology of nocturnal enuresis is still unknown with some emphasis the role of nocturnal polyurea which is beyond the functional capacity. Others, points to the role of arousal defects. Bladder overactivity is associated with few cases of MNE.

The standard treatment of enuretic children is by behavioural modification, alarm therapy, desmopressin and antidepressant. Kosar et al reported a study on the effect of oxybutynin in the management of enuretic children. He

found that it is most effective drug and work by improvement of bladder capacity and improving bladder overactivity [7].

Evaluation of bladder capacity and detrusor dysfunction is best done by urodynamic study(UDS). However, UDS is costly, invasive, painful, time consuming and not available for all children. Some assume that it has no additional benefits over the standard evaluation for enuretic children. Schewe et al found that it is not beneficial for MNE patients [8].

In our study we reported detrusor overactivity in more than 50% of MNE and increased bladder sensations in

24% of them and this was coincident with other studies that reported detrusor overactivity in (30% to 60%) of MNE and 68% to more than 90% in NMNE [9-11] However, We should bear in mind that detrusor overactivity was detected in more than 10% of a symptomatic normal individuals. Urodynamic study should be offered for nocturnal enuresis patients who are refractory to behavioural and medical treatment and in cases associated with filling or voiding dysfunction.

The limitation of our study is the small size of the sample and we heterogenous age groups. We recommend more studies that combine the urodynamic finding with the treatment outcome.

Conclusion

Children with Monosymptomatic nocturnal enuresis have abnormal overactive detrusor contractions and bladder sensations. This emphasis the role of urodynamic study in cases refractory to treatment.

Table 1: Patients demographic and urodynamic data.

Demographic and Urodynamic data	Number of patients (N = 42)
Gender (patient)	
Female	27 (64.5%)
Male	15 (35.5%)
Age (years)	15 ±4.5 (R: 6 - 29)
Increased bladder sensations (patients)	10(24%)
Detrusor Overactivity (patients)	22 (52.5%)
Cystometric capacity (ml)	330 ±106
Maximum flow rate (ml/sec)	18.5 ± 9
Voided volume (ml)	314 ± 105
Post micturition residual urine (ml)	13 (range: 0 – 50)

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