

ORIGINAL ARTICLE

AN OUTCOME OF CONSERVATIVE MANAGEMENT OF PRIMARY NOCTURNAL ENURESIS IN CHILDREN

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Background: Primary nocturnal enuresis is one of the common problems in children. Mostly parents are concern for this condition in children and also children are depressive from this condition. The main stay of treatment is the training of child. The objective of this study was to look for the outcome of conservative management of primary nocturnal enuresis. **Methods:** This study was done in OPD of paediatrics department. Patients aged five year or more were included in the study. Patient age, weight, sex, blood pressure, family history in siblings and parents, number of wet days/week, recorded on specific *proforma* along with renal function tests. Patients were advised fluid restriction after evening and micturition before sleep and after 2–3 hours of sleep. Follow up was done after six months to observe for the impact of habit change. Data has been analysed by SPSS 20 and results are taken significant with p -value <0.05 . **Results:** Out of 81 patients, 41 were male and 40 females. Age ranged from 5 to 14 years and mean age was 8.2 ± 2.35 years. There were 11.1% parents who had primary nocturnal enuresis during childhood and in 29.6% siblings, history was positive. Follow up at 6 months, 58% patients improved while 42% showed no improvement. There was significant relationship between evening fluid restriction, micturition before and after sleep with improvement at 6 months with p -value of 0.010, <0.001 and 0.002 respectively. **Conclusion:** Conservative management is the effective intervention in children as parents should be emphasized for habit change.

Keywords: Primary nocturnal enuresis; Children; Conservative management

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INTRODUCTION

Primary nocturnal enuresis is the one of the common problems in children. It is defined as bed wetting at night after 5 years of life either voluntary or involuntary for at least 3 consecutive months.¹ Millions of children are wet when they wake up in the morning due to issue of primary nocturnal enuresis.² Primary nocturnal enuresis is reported in 15 to 20% of children who are five years of age and even adolescents are also having this issue up to 2% of cases.³

Though primary nocturnal enuresis is benign condition with majority of patients remitting spontaneously yet there are psychological issues along with social and emotional problems and stress to children.^{4,5}

Paediatric nephrologists are in continuous search of ideal treatment for primary nocturnal enuresis but despite availability of multiple treatments, there is still no specific treatment option for definite treatment.⁶ Though drugs like imipramine and DDAVP (Desmopressin) are available yet not used commonly due to adverse effects and rate of relapse.⁷ The main stay of treatment is the training of child.^{8,9} The most common strategy is behavioural changes like fluid restriction, Micturition before and after few hours of sleep.¹⁰

The objective of this study is to look for the outcome of conservative management of primary nocturnal enuresis in children. If there is improvement with the

conservative management then it is the best way of treating primary nocturnal enuresis with only behavioural modification.

MATERIAL AND METHODS

This study was done in outpatient of paediatrics department of one of teaching hospital from October 2017 till March 2020. Institutional review board approval was taken and informed consent taken from parents for inclusion in the study. Children of either sex five years and above till age of sixteen years were included, who were having history of night time enuresis on bed for at least 3 months. Patients having history of day time enuresis, secondary enuresis, developmental delay, syndromic child, urinary tract infection, urinary tract anomalies, diabetes mellitus or insipidus, chronic kidney disease and tubulopathy were excluded. After inclusion in the study parents were counselled about the treatment strategy which included behavioural change including fluid restriction in evening, i.e., after 5 pm including soft drinks and caffeine containing liquids like tea, micturition before sleep and micturition after 2–3 hours of sleep for at least 6 months. Follow up was done initially at two weeks to check for the compliance and then after six months to observe for the impact of habit change. Follow up of 6 months was documented as outcome either as

improvement if bed wetting stopped for at least 2 weeks or no improvement if still doing bed wetting at night.

Patient age, weight, sex, systolic and diastolic blood pressure, history of bed wetting in siblings and parents, number of wet days per week, recorded on specific proforma along with renal function tests. Data has been analysed by SPSS 20 and results are taken significant with *p* value <0.05.

RESULTS

In this study total of 127 patients were included. Out of 127 patients 47 patients were lost to follow up due to any reason. Remaining were 81 patients, 41 (50.6%) were male and 40 (49.4%) were females. Age ranged from 5 years to 14 years with mean age of 8.2±2.35 years. Descriptive statistics are given in table-1. Most of the patients with nocturnal enuresis were in age range of 5–10 years, as out of 81 patients 65 (80.2%) fall in this age group while only 19.8% patients were above 10 years. Number of wet days per week were 6 or more were in most of the patients as 49 (60.5%) patients, while 3–5 wet days per week were in 23 (28.4%) patients and only 11.1% patients were having 2 or less wet days per week. Parental history was there in 9

(11.1%) patients while in siblings there was history of nocturnal enuresis in 29.6% cases. On follow up at 6 months 47 (58%) patients improved while 34 (42%) showed no improvement. Sex wise follow up and outcome is given in table 2. Fluid restriction as part of treatment strategy was observed in 49 (60.5%) patients while no fluid restriction was done in 32 (39.5%) patients in evening. There was significant relationship between evening fluid restriction and improvement at 6 months with *p*-value of 0.010 (Table-3).

Other behavioural modification was micturition before sleep which was followed by 67 (82.7%) patients and 14 (17.3%) did not follow the advice (Table-4). There was very much significant relationship between micturition before sleep and improvement at follow up of 6 months with *p* value of <0.001. There was also advice to go for micturition after 2 to 3 hours of sleeping as 69 (85.2%) patients were doing so while 12 (14.8%) patients did not follow (Table-5). There was also significant relationship between micturition after sleep and improvement at 6 months follow up with *p*-value of 0.002.

Table-1: Weight, age, blood pressure, urea, creatinine, wetting day's table

	Minimum	Maximum	Mean	Std. Deviation
Age (years)	5.00	14.00	8.1975	2.34578
Weight (Kg)	12.00	43.00	23.2395	7.49642
Systolic BP (mm Hg)	90.00	120.00	99.5191	6.99133
Diastolic BP (mm Hg)	50.00	80.00	66.9103	6.65668
Urea (mg/dl)	12.00	43.00	23.9395	4.26158
Creatinine (mg/dl)	.10	0.90	0.4457	0.12326
Wetting days/week	1	7	5.53	1.982

Table-2: Follow up at 6 months outcome vs sex

Follow Up 6 months (improved)	Sex		Total
	Male	Female	
Yes	20	27	47
No	21	13	34
Total	41	40	81

Table-3: Fluid Restriction (FR) vs follow up 6 months, Cross tabulation

Fluid Restriction (FR)	Follow Up 6 months (improved)		Total	<i>p</i> -value
	Yes	No		
Yes	34	15	49	0.010
No	13	19	32	
Total	47	34	81	

Table-4: Micturition Before Sleep (MBS) vs follow up 6 months, Cross tabulation

Micturition Before Sleep (MBS)	Follow Up 6 months (improved)		Total	<i>p</i> -value
	Yes	No		
Yes	45	22	67	<0.001
No	2	12	14	
Total	47	34	81	

Table-5: Micturition after Sleep (MAS) vs Follow up 6 months, Cross tabulation

Micturition After Sleep (MAS)	Follow Up 6 months (improved)		Total	<i>p</i> -value
	Yes	No		
Yes	45	24	69	0.002
No	2	10	12	
Total	47	34	81	

DISCUSSION

Primary nocturnal enuresis is the condition which not only affects the children psychologically and socially but also the parents. Every patient needs separate plan of treatment. There is no consensus among doctors about the definite treatment of primary nocturnal enuresis as there are multiple options available including the drugs.⁶ But the main issue with use of drugs is adverse effect like heart block and sudden death with use of imipramine and fluid retention and hyponatremia with use of Desmopressin along with increase rate of relapse.⁷ There is need for specific treatment which should be effective as drug intervention with no adverse effects. This study has been done to look for the outcome with conservative management of primary nocturnal enuresis as only intervention required is behavioural modification in form of fluid restriction after evening along with micturition before and few hours of sleep.

Nuzhat H *et al*¹¹ in their study included 130 patients and did comparative study. On follow up at 30 days there was complete response in 38.5% children with behavioural modification. In comparison in our study the response rate was 58% but we followed our patients for 6 months.

One study conducted by El Baz F *et al*¹² in Egyptian children which was randomized interventional comparative study. In this study Desmopressin group was compared with behavioural therapy group. Though there was response in both groups yet statistically not significant but relapse rate was significant in children taking Desmopressin. In their study the response rate for behavioural therapy group was 65% as compare to our study in which response rate was 58%, which is almost comparable, as their behavioural therapy also included list of other interventions. Ma Y *et al*¹³ study, which was conducted in China compare the response of obese and overweight children with that of normal weight children and response to behavioural modification was good as compare to obese children. The response rate was 26.8% at follow up of 3 months while in our study response rate was 58% and we followed the patients for 6 months.

In Brazil Campos RM *et al*¹⁴ did one randomized control trial and compare behavioural modification with pelvic floor muscle training and oxybutynin. Follow up at 12 weeks and 2 years was done. Though there was improvement in all the groups yet no significant relationship between the outcomes of three groups. The group in which only behavioural modification was done the complete response was 58% and 63% on follow up at 12 weeks and 2 years respectively, which is comparable to our study complete response rate as 58% of our patients

responded completely at 6 months follow up. Ma Y *et al*¹⁵ in their study treated patients with Desmopressin along with behavioural interventions and then grouped the patients according to behavioural therapy compliance. They concluded that apart from appetite and stool frequency, micturition before and after few hours of sleep are the important factors for improvement. In our study these two behavioural modifications were the most important factors of improvement with significant association as p -value was <0.05 .

In one of the review articles by Chan IHY *et al*¹⁶ recommended the treatment options including the behavioural modification including fluid restriction in evening along with micturition before and after sleeping as we did intervention in our study. von Gontard A *et al*¹⁷ in their review article concluded that conservative management is the appropriate approach for children with primary nocturnal enuresis apart from alarm therapy and drugs should only be used as adjunct therapy. Alwis US *et al*¹⁸ also found out high intake of tea and dietary sodium is associated with nocturia and one of contributing factor in pathogenesis of the condition. So, control of these may improve the outcome. In our study we also advised the patients to restrict the fluid intake including juices and tea after evening and it was significantly associated with improvement at 6 months follow up. Sinha R *et al*¹⁹ in their mini review concluded that aetiology consideration and targeted treatment should be given and initial step of management is behavioural intervention including fluid restriction along with micturition before and after sleep as in our study these interventions led to improvement in 58% of patients at 6 months of follow up.

We studied the effect of the conservative management in our children but significant no of patients lost to follow up. Most of the parents want effective treatment in form of medications to control the issue on early basis. Other limitations were that in our study we did not take the dietary and bowel habits of children and parents' reaction to their children when they wake up with wet beds in morning.

CONCLUSION

Conservative management of primary nocturnal enuresis including fluid restriction in evening along with micturition before going to bed and after few hours of sleeping is the effective approach to treat children but it needs commitment of both children and parents. But multicentre studies with more no of patients are required for recommending standard form of treatment for primary nocturnal enuresis.

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AUTHORS' CONTRIBUTION

SSHS: Theme, data collection, data analysis, data interpretation, write-up. BA: Data collection, write-up, literature search. AR, SN: Literature search. AR: Supervision.

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