Clinical characteristics and related factors of psychological and behavioral problems in children with family primary nocturnal enuresis



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ABSTRACT

Family primary nocturnal enuresis (FPNE)., also known as hereditary nocturnal enuresis, means that there have been patients with primary enuresis in their immediate family members now or in the past, and families often have the phenomenon of nocturnal enuresis accumulation, which has a serious impact on the psychology and daily life of children and family members. In recent years, there are few studies on the clinical characteristics, emotional and behavioral problems of enuresis children with positive family history. The purpose of this study is to investigate the clinical characteristics and the effects of emotional and behavioral problems in children with familial aggregation of PNE, providing a reference basis for the treatment of children with FPNE.

METHODS

A total of 306 children aged 5-16 years with primary nocturnal enuresis who were treated in the nocturnal enuresis clinic of the first affiliated Hospital of Xinxiang Medical College from September 2020 to August 2022 were collected. The inclusion criteria were as follows: (1) the age was 5-16 years old; (2) involuntary urination during sleep was more than once a week for more than 3 months; (3) nocturnal enuresis from childhood and no bed-wetting period for more than 6 months; (4) informed consent and voluntary participation of the family members of the patients. Exclusion criteria: (1) neurological diseases or anatomical malformations of the urinary system; (2) history of urinary surgery; (3) other diseases that may cause secondary nocturnal enuresis, such as diabetes, diabetes insipidus, tethered cord syndrome and so on. Children with PNE were divided into familial primary nocturnal enuresis group (FPNE group, n = 45) and sporadic primary nocturnal enuresis group (SPNE group, n = 261) according to whether three generations of family members were involved or not. The clinical characteristics, emotional and behavioral changes of FPNE group were analyzed. This study was approved by the Medical Ethics Committee of the first affiliated Hospital of Xinxiang Medical College.

RESULTS

The incidences of severe NE, non-monosymptomatic nocturnal enuresis (NMNE)., abnormal stool and nocturnal micturition ≥ 2 times in the FPNE group were (68%, 75%, 48% and 42%, respectively) significantly higher than the sporadic enuresis group (SPNE group) (35%, 47%, 24% and 11%, respectively). The number of enuresis children aged 13-16 years old in FPNE group was 44.4% (20/45), which was significantly higher than 19.2% in the SPNE group (50/261) (P < 0.05). In the FPNE group, 46.7% (21/45) children were autosomal dominant, 33.3% (15/45) children were autosomal stealth inheritance, and 20.0% (9/45) children showed polygenic inheritance. The total scores of emotional symptoms, hyperactivity symptoms and difficulties in the FPNE group were higher than those in the SPNE group (P < 0.05). There was no significant difference in the scores of conduct problems, peer communication and society between the two groups(P>0.05). Multiple linear regression analysis showed that age, poor academic performance and high total score of PSQ were the influencing factors of emotional symptoms in children with FPNE. Poor academic performance, abnormal stool, bladder dysfunction and high total score of PSQ were the influencing factors of hyperactivity symptoms in children with FPNE.

CONCLUSIONS

The nocturnal enuresis symptom of SPNE group is more serious, and the incidence of bladder dysfunction and abnormal stool is higher. The inheritance mode of FPNE children is mainly autosomal dominant inheritance, followed by chromosome stealth inheritance, and finally polygene inheritance. The incidence of psychological and behavioral abnormalities in children with FPNE is high, and there are many influencing factors. There are many ways of inheritance of FPNE, among which autosomal dominant inheritance is the most common, the incidence of emotional symptoms and hyperactive symptoms is high, and the clinical symptoms are more serious, the risk of frequent and urgent urination is higher, and it is not easy to cure with age.

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Click on the border once to highlight and select a different font or font size that suits you. This text is in Arial 14pt and is easily readable up to 6 feet away.

Table1 Comparison of general data between FPNE group and SPNE group

	FPNE group	SPNE group	Total (n=306)	Ζ/χ2	P value	symptoms					
Sex		Carelon Star	Constant of	χ <mark>2=1.131</mark>	P=0.287		B value	SE	SRC	t	<i>P</i> value
male	30 (66.7)	152 (58.2)	182 (59.5)								
female	15 (33.3)	109 (41.8)	124 (40.5)			Age	0.165	0.068	0.284	2.422	0.021
Age	12.0(9.0,14.0)	10.0 (7.0,12.0)	10.0 (7.0,12.0)	Z=-4.143	<0.001	Sex	-0.099	0.431	-0.027	-0.228	0.821
Place of residence				<mark>χ2=1.412</mark>	P=0.235	Character	0.380	0.410	0.106	0.927	0.360
urban	15 (33.3)	65 (24.9)	80 (26.1)			Place of residence	-0.095	0.427	-0.026	-0.222	0.826
rural	30 (66.7)	196 (75.1)	226 (73.9)			Academic performance	1.423	0.571	0.367	2.490	0.018
Character				χ <mark>2=0.5</mark> 57	P=0.456	Order of severity	-0.261	0.453	-0.070	-0.575	0.569
outgoing	26 (57.8)	166 (63.6)	192 (62.7)			Constipation	0.019	0.469	0.006	0.040	0.968
introverted	19 (42.2)	95 (36.4)	114 (37.3)			Functional disorders of	0.303	0.494	0.076	0.613	0.544
Academic performance				χ2=0.736	P=0.692		0.505	U.474	0.070	0.013	U.344
good	19 (42.2)	93 (35.6)	112 (36.6)			bladder					
	10 (10 0)	114 (43.7)	132 (43.1)			PSQI score	0.280	0.094	0.424	2.975	0.005
medium	18 (40.0)	114 (45.7)	ISE (ISII)								
poor	18 (40.0) 8 (17.8)	54 (20.7)	62 (20.3)			States and		2.7.14	i c		
				χ2=18.069	<0.001	Table4 M			gression of	hyperacti	vity
poor				χ2=18.069	<0.001	Table4 M		linear reg dren with		hyperacti	vity
poor Order of severity	8 (17.8)	54 (20.7)	62 (20.3)	χ2=18.069	<0.001	Table4 M	in chil	dren with	FPNE	hyperacti	
poor Order of severity light	8 (17.8) 14 (31.1)	54 (20.7) 169 (64.8)	62 (20.3) 183 (59.8)	χ2=18.069 χ2=9.616		Table4 M				hyperacti t	vity Pvalue
poor Order of severity light serious	8 (17.8) 14 (31.1)	54 (20.7) 169 (64.8)	62 (20.3) 183 (59.8)			Table4 M	in chil	dren with	FPNE	hyperacti t 0.106	
poor Order of severity light serious Nocturia frequency	8 (17.8) 14 (31.1) 31 (68.9)	54 (20.7) 169 (64.8) 92 (35.2)	62 (20.3) 183 (59.8) 123 (40.2)			Table4 M symptoms	in chil B value	dren with SE	FPNE src	t	<i>P</i> value
poor Order of severity light serious Nocturia frequency once	8 (17.8) 14 (31.1) 31 (68.9) 32 (71.1)	54 (20.7) 169 (64.8) 92 (35.2) 231 (88.5)	62 (20.3) 183 (59.8) 123 (40.2) 263 (85.9)			Table4 M symptoms Age	in chil B value 0.005 0.026	dren with <u>SE</u> 0.044 0.280	FPNE SRC 0.011 0.010	t 0.106 0.092	<i>P</i> value 0.916 0.927
poor Order of severity light serious Nocturia frequency once twice or more	8 (17.8) 14 (31.1) 31 (68.9) 32 (71.1)	54 (20.7) 169 (64.8) 92 (35.2) 231 (88.5)	62 (20.3) 183 (59.8) 123 (40.2) 263 (85.9)			Table4 M symptoms Age Sex Character	in chil B value 0.005 0.026 -0.030	dren with <u>SE</u> 0.044 0.280 0.266	FPNE SRC 0.011 0.010 -0.011	t 0.106 0.092 -0.111	P value 0.916 0.927 0.912
poor Order of severity light serious Nocturia frequency once twice or more Accompanying symptom	8 (17.8) 14 (31.1) 31 (68.9) 32 (71.1) 13 (28.9)	54 (20.7) 169 (64.8) 92 (35.2) 231 (88.5) 30 (11.5)	62 (20.3) 183 (59.8) 123 (40.2) 263 (85.9) 43 (14.1)	χ2=9.616	<0.01	Table4 M symptoms Age Sex Character Place of residence	in chil B value 0.005 0.026 -0.030 -0.292	dren with SE 0.044 0.280 0.266 0.277	FPNE SRC 0.011 0.010 -0.011 -0.108	t 0.106 0.092 -0.111 -1.053	P value 0.916 0.927 0.912 0.300
poor Order of severity light serious Nocturia frequency once twice or more Accompanying symptom constipation	8 (17.8) 14 (31.1) 31 (68.9) 32 (71.1) 13 (28.9) 22 (48.9)	54 (20.7) 169 (64.8) 92 (35.2) 231 (88.5) 30 (11.5) 63 (24.1)	62 (20.3) 183 (59.8) 123 (40.2) 263 (85.9) 43 (14.1) 85 (27.8)	χ2=9.616 χ2=11.71	<0.01	Table4 M symptoms Age Sex Character	in chil B value 0.005 0.026 -0.030	dren with <u>SE</u> 0.044 0.280 0.266	FPNE SRC 0.011 0.010 -0.011	t 0.106 0.092 -0.111	P value 0.916 0.927 0.912
poor Order of severity light serious Nocturia frequency once twice or more Accompanying symptom constipation functional disorders	8 (17.8) 14 (31.1) 31 (68.9) 32 (71.1) 13 (28.9) 22 (48.9)	54 (20.7) 169 (64.8) 92 (35.2) 231 (88.5) 30 (11.5) 63 (24.1)	62 (20.3) 183 (59.8) 123 (40.2) 263 (85.9) 43 (14.1) 85 (27.8)	χ2=9.616 χ2=11.71	<0.01	Table4 M symptoms Age Sex Character Place of residence	in chil B value 0.005 0.026 -0.030 -0.292	dren with SE 0.044 0.280 0.266 0.277	FPNE SRC 0.011 0.010 -0.011 -0.108	t 0.106 0.092 -0.111 -1.053	P value 0.916 0.927 0.912 0.300
poor Order of severity light serious Nocturia frequency once twice or more twice or more Accompanying symptom functional disorders of bladder Sleep score,	8 (17.8) 14 (31.1) 31 (68.9) 32 (71.1) 13 (28.9) 22 (48.9) 34 (75.6) 4.0 (2.0,6.0)	54 (20.7) 169 (64.8) 92 (35.2) 231 (88.5) 30 (11.5) 63 (24.1) 123 (47.1) 4.0 (2.0,6.0)	62 (20.3) 183 (59.8) 123 (40.2) 263 (85.9) 43 (14.1) 85 (27.8) 157 (51.3) 4.0(2.0,6.0)	χ2=9.616 χ2=11.71 χ2=12.417 Ζ=-0.721	<0.01 <0.001 <0.001 P=0.471	Table4 M symptoms Age Sex Character Place of residence Academic performance	in chil B value 0.005 0.026 -0.030 -0.292 0.907	dren with SE 0.044 0.280 0.266 0.277 0.371	FPNE SRC 0.011 0.010 -0.011 -0.108 0.315	t 0.106 0.092 -0.111 -1.053 2.444	P value 0.916 0.927 0.912 0.300 0.020
poor Order of severity light serious Nocturia frequency once twice or more Accompanying symptom constipation functional disorders of bladder	8 (17.8) 14 (31.1) 31 (68.9) 32 (71.1) 13 (28.9) 22 (48.9) 34 (75.6) 4.0 (2.0,6.0) the Clinic	54 (20.7) 169 (64.8) 92 (35.2) 231 (88.5) 30 (11.5) 63 (24.1) 123 (47.1) 4.0 (2.0,6.0) al character	62 (20.3) 183 (59.8) 123 (40.2) 263 (85.9) 43 (14.1) 85 (27.8) 157 (51.3) 4.0(2.0,6.0) istics of f	χ2=9.616 χ2=11.71 χ2=12.417 Z=-0.721 amily pr	<0.01 <0.001 <0.001 P=0.471 rimary	Table4 M symptoms Age Sex Character Place of residence Academic performance Order of severity Constipation	in chil B value 0.005 0.026 -0.030 -0.292 0.907 0.283 0.641	dren with SE 0.044 0.280 0.266 0.277 0.371 0.294 0.304	FPNE	t 0.106 0.092 -0.111 -1.053 2.444 0.960 2.105	P value 0.916 0.927 0.912 0.300 0.020 0.344 0.043
<pre>poor poor created by the serious fight serious Nocturia frequency once twice or more twice or more Accompanying symptom functional disorders of bladder Sleep score. Table1 showed</pre>	8 (17.8) 14 (31.1) 31 (68.9) 32 (71.1) 13 (28.9) 22 (48.9) 34 (75.6) 4.0 (2.0,6.0) the Clinic esis, The	54 (20.7) 169 (64.8) 92 (35.2) 231 (88.5) 30 (11.5) 63 (24.1) 123 (47.1) 4.0 (2.0,6.0) al character children in l	62 (20.3) 183 (59.8) 123 (40.2) 263 (85.9) 43 (14.1) 85 (27.8) 157 (51.3) 4.0(2.0,6.0) istics of f FPNE group	<pre> χ2=9.616 χ2=11.71 χ2=12.417 Z=-0.721 amily pr are olde </pre>	<0.01 <0.001 <0.001 P=0.471 rimary	Table4 M symptoms Age Sex Character Place of residence Academic performance Order of severity Constipation Functional disorders of	in chil B value 0.005 0.026 -0.030 -0.292 0.907 0.283	dren with SE 0.044 0.280 0.266 0.277 0.371 0.371	FPNE	t 0.106 0.092 -0.111 -1.053 2.444 0.960	P value 0.916 0.927 0.912 0.300 0.020 0.344
poor Order of severity light serious Nocturia frequency once twice or more twice or more Accompanying symptom constipation functional disorders of bladder Sleep score, Table1 showed nocturnal enur	8 (17.8) 14 (31.1) 31 (68.9) 32 (71.1) 13 (28.9) 22 (48.9) 34 (75.6) 4.0 (2.0,6.0) the Clinication of the clinication o	54 (20.7) 169 (64.8) 92 (35.2) 231 (88.5) 30 (11.5) 63 (24.1) 123 (47.1) 4.0 (2.0,6.0) al character children in l om severe ent	62 (20.3) 183 (59.8) 123 (40.2) 263 (85.9) 43 (14.1) 85 (27.8) 157 (51.3) 4.0(2.0,6.0) istics of f FPNE group	<pre> χ2=9.616 χ2=11.71 χ2=12.417 Z=-0.721 amily pr are olde </pre>	<0.01 <0.001 <0.001 P=0.471 rimary	Table4 M symptoms Age Sex Character Place of residence Academic performance Order of severity Constipation	in chil B value 0.005 0.026 -0.030 -0.292 0.907 0.283 0.641	dren with SE 0.044 0.280 0.266 0.277 0.371 0.294 0.304	FPNE	t 0.106 0.092 -0.111 -1.053 2.444 0.960 2.105	P value 0.916 0.927 0.912 0.300 0.020 0.344 0.043

Table2 Comparison of emotional and behavioral problems between FPNE group and SPNE group

	FPNE group	SPNE group	Total (n=306)	Z	P value
Emotional symptoms	4.0 (2.5,5.0)	3.0 (1.0,4.0)	3.0 (2.0,4.0)	Z=-3.367	P=0.001
Conduct I symptoms	2.0 (1.0,2.0)	2.0 (1.0,3.0)	2.0 (1.0,3.0)	Z=-1.114	P=0.253
Hyperactivity symptoms	5.0 (4.5, 6.0)	4.0 (3.0,5.0)	4.0 (3.0,5.0)	Z=-5.877	P<0.001
Peer communication	2.0 (2.0,4.0)	3.0 (2.0,4.0)	3.0 (2.0,4.0)	Z=-0.390	P=0.697
Social behavior	8.0 (7.0, 9.0)	8.0 (7.0, 10.0)	8.0 (7.0,9.0)	Z=-1.766	P=0.077
Difficulty score	22.0 (18.5, 23.0)	19.0 (17.0,22.0)	20.0 (17.0,22.0)	Z=-3.194	P=0.001

Table2 showed the emotional and behavioral problems between FPNE group. The children in FPNE group had higher psychological and behavioral problems, and the total scores of emotional symptoms, hyperactivity symptoms and difficulties in FPNE group were higher than those in SPNE group.



Table3 Multiple linear regression of emotional

Table3, 4 showed that Multiple regression Analysis of lated factors of emotional and Behavioral problems in NE Children. Older children with enuresis, poor academic rformance and high total score of PSQ are the risk ctors of emotional symptoms in children with FPNE. Poor ademic performance, abnormal stool, bladder dysfunction high total score of PSQ are the risk factors of peractivity symptoms in children with FPNE.