Do Children With Primary Nocturnal Enuresis Have Clinically Significant Behavior Problems?

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Objective: To determine if primary nocturnal enuresis (PNE) is accompanied by significant behavioral comorbidity.

Design: A survey design using a standardized behavioral rating scale.

Setting: Behavioral pediatric clinics in the Midwest.

Participants: Subjects with PNE (n=92) were selected from 122 consecutive referrals for enuresis. Criteria included age 5 years or older, PNE status, and wetting frequency of at least once per week. The clinical sample without PNE (n=92) was randomly selected from 429 consecutive referrals to the same pediatric clinics, stratified for age and sex. The nonclinical sample (n=92) was randomly selected by strata from the standardization sample (N=614) of the behavioral checklist used in the study.

Main Outcome Measure: The Eyberg Child Behavior Inventory (ECBI), a standardized parent report scale, was used to measure the degree of behavioral comorbidity. The ECBI yields 2 scores, Problem Intensity and Problem Number.

Results: Results from 2 separate 3 (group) × 2 (sex) analyses of variance indicated a significant main effect for group on Problem Intensity and Problem Number (P<.001). For Problem Intensity, post hoc comparisons indicated the mean of the PNE sample was significantly higher than the mean of the nonclinical sample (P<.05), but the mean scores of the clinical sample were significantly higher than those of both the PNE and nonclinical samples (P<.05). For Problem Number, post hoc comparisons revealed the means of the PNE and nonclinical samples did not differ from each other (P>.05) but were lower than the mean of the clinical sample (P<.05).

Conclusion: Primary nocturnal enuresis does not present with significant behavioral comorbidity in most cases. The results suggest that, with the exception of an extraordinary clinical presentation, pediatricians should treat PNE as a common biobehavioral problem without a psychiatric component.

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Editor's Note: The flow of children with primary nocturnal enuresis into the office of primary care clinicians can continue with little concern that a psychiatric referral is necessary. Catherine D. DeAngelis, MD

Primary nocturnal enuresis (PNE) is typically encountered in pediatric primary care and requires a decision about whether to wait and watch, work up and treat, or refer for a psychiatric consult. Interpreting PNE as a symptom of an underlying psychopathological problem is more likely to result in referral than if it is interpreted as a discrete entity. Unfortunately, the conflicting literature supports both interpretations. One body of literature suggests PNE is a symptom of a refractory mental health condition that requires specialized mental health treatment. Another body of literature suggests PNE is a biobehavioral problem typically requiring only direct medical and/or behavioral treatment for the wetting itself.

One empirical method to validate these perspectives is to examine the comorbidity of PNE and clinically significant behavior problems. However, few published articles, especially those arguing for underlying psychopathological abnormalities, supply data, those with data often do not use research designs, and few relevant articles are published in journals to which pediatricians have ready access (see Moffatt for an exception). This article describes a database analysis of PNE and clinically significant behavioral comorbidity.
SUBJECTS AND METHODS

SUBJECTS

The data described herein were obtained from archival records; thus, the study was approved by the University of Nebraska Internal Review Board, Omaha, with an exemption from informed-consent requirements. The study compared data from 3 samples of children: those with PNE, those clinically referred without PNE (clinical sample), and children without PNE who were not clinically referred (nonclinical sample). Each sample included 92 children matched for age (range 5-13 years, mean, 7.8 years) and sex (62 boys, 30 girls). The PNE sample was drawn from 122 consecutive referrals for enuresis to 2 pediatric behavioral clinics in the Midwest. Selection criteria included age 5 years or older, primary PNE status (ie, failure to attain nocturnal continence for any 6-month period), and wetting frequency of at least once per week. The clinical sample without PNE was selected randomly (but stratified across age and sex to match the PNE sample) from a population of 429 consecutive referrals to the same 2 clinics. The nonclinical sample (also stratified for age and sex) was selected randomly from the standardization group (N=614) for the instrument used in this study.12-17 Briefly, this sample was drawn from consecutive referrals to an outpatient pediatric clinic. Most (68%) of the referrals involved well-child care or minor acute illness, some (25%) involved chronic illness, and a minority involved developmental or behavior assessment.10,17

MEASURE

The Eyberg Child Behavior Inventory (ECBI),12-17 a standardized parent-report scale, presents 36 common childhood problem behaviors and yields a Problem Intensity and a Problem Number score. The Problem Intensity score is determined by calculating the total value of ratings for each behavior on a 1 (never) to 7 (always) Likert score in response to the question, “How often does this occur with your child?” (range, 0-252). The Problem Number score is determined by calculating the number of yes responses to the question, “Is this a problem for you?” for each behavior (range, 0-96). Clinical cutoff scores for the ECBI are 127 for the Problem Intensity score and 11 for the Problem Number score. These scores were empirically derived and subsequent tests of them revealed a robust capacity to discriminate between problem and nonproblem children.17

The utility of the ECBI in the assessment of childhood behavioral characteristics has been well documented.12-17 Previous research with normative samples ranging in age from 2 to 18 years has demonstrated reliability coefficients for the ECBI scores from 0.86 (test-retest) to 0.98 (internal consistency). Previous research with other child problems frequently seen in pediatric primary care (eg, enopresis, thumbsucking) has demonstrated the value of the ECBI for addressing questions similar to those posed here.13,14 Not surprisingly, citation records indicate the ECBI as a dependent measure in more than 75 peer-reviewed publications.

Table 1. Eyberg Child Behavior Inventory Scores for Study Samples by Sex

<table>
<thead>
<tr>
<th>Group</th>
<th>No. of Patients</th>
<th>Problem Intensity, Mean (SD)</th>
<th>Problem Number, Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary nocturnal enuresis</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boys</td>
<td>62</td>
<td>124 (34)</td>
<td>10 (8)</td>
</tr>
<tr>
<td>Girls</td>
<td>30</td>
<td>101 (20)</td>
<td>7 (7)</td>
</tr>
<tr>
<td>Total</td>
<td>92</td>
<td>117 (33)</td>
<td>10 (8)</td>
</tr>
<tr>
<td><strong>Clinical sample</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boys</td>
<td>62</td>
<td>140 (31)</td>
<td>17 (7)</td>
</tr>
<tr>
<td>Girls</td>
<td>30</td>
<td>131 (30)</td>
<td>16 (7)</td>
</tr>
<tr>
<td>Total</td>
<td>92</td>
<td>137 (31)</td>
<td>17 (7)</td>
</tr>
<tr>
<td><strong>Nonclinical sample</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boys</td>
<td>62</td>
<td>105 (36)</td>
<td>9 (9)</td>
</tr>
<tr>
<td>Girls</td>
<td>30</td>
<td>102 (38)</td>
<td>6 (8)</td>
</tr>
<tr>
<td>Total</td>
<td>92</td>
<td>104 (37)</td>
<td>8 (8)</td>
</tr>
</tbody>
</table>

*For Problem Intensity: clinical sample > primary nocturnal enuresis > nonclinical sample (P<.05); boys > girls (P<.05).
†For Problem Number: clinical sample > primary nocturnal enuresis, nonclinical sample (P<.05).

RESULTS

The Problem Intensity and Problem Number scores were analyzed separately. Results of a 3 (group) × 2 (sex) analysis of variance (ANOVA) with Problem Intensity as the dependent variable indicated significant main effects for group ($F_{2,270}=20.05, P<.001$) and sex ($F_{1,270}=6.97, P<.01$). Post hoc comparisons using the Tukey test indicated that mean scores of the PNE sample on Problem Intensity were significantly higher than those of the nonclinical sample ($P<.05$), but mean scores of the clinical sample were significantly higher than those of both the PNE and nonclinical samples ($P<.05$; Table 1). For the sex main effect, mean scores on Problem Intensity were higher for boys than for girls. The group × sex interaction effect was not significant ($P>.05$), indicating the effect of sex did not differ significantly across groups.

For Problem Number, results of a 3 (group) × 2 (sex) ANOVA indicated significant main effects for group ($F_{2,270}=31.45, P<.001$). Post hoc comparisons using the Tukey test indicated the mean score of the clinical sample on Problem Number was significantly higher than the mean scores of the PNE and nonclinical samples ($P<.05$). However, the PNE and nonclinical samples were not significantly different.

We also calculated the number of scores that fell above the clinical cutoffs for Problem Intensity and Problem Number for each group (Table 2). For boys, 61% of the clinical sample had at least 1 score above the clinical cutoff, compared with 39% for the PNE sample and 19% for the nonclinical sample. For girls, 60% of the clinical sample had a score in the clinical range, compared with 17% for the PNE sample and 13% for the nonclinical sample.
The results support and extend those of previous research suggesting that children with PNE do not necessarily have clinically significant behavioral comorbidity. The results do show an increased frequency of behavior problems for the PNE sample, but the mean for this group was substantially lower than the clinical cutoff for the ECBI and significantly lower than the mean for the referred sample. Additionally, the mean for Problem Number for the PNE sample was in the normal range, not different than the mean for the nonclinical sample, and significantly lower than the mean for the clinical sample (Table 1).

Boys were rated as having more frequent behavior problems than girls, a finding that has been frequently reported.12-16 However, in contrast with previous research9 that suggests that girls with PNE have more behavioral comorbidity than boys with PNE, results from the current study suggest boys with PNE have more behavior problems than girls with PNE. The percentage of girls with PNE who scored in the clinically significant range on the ECBI was approximately equal to that in the nonclinical sample (17% and 13%, respectively), and was much lower than that in the clinical sample (60%). Boys with PNE, on the other hand, had a higher percentage of scores in the clinically significant range (39%) compared with the nonclinical boys (19%). Still, the percentage of boys scoring in the clinically significant range was lower in the PNE sample than in the clinical sample (62%), and the mean scores for the boys with PNE on the 2 ECBI scales were considerably lower than the criteria set for clinical significance. This discrepancy between the findings here and those from previous research may be due to our sole focus on PNE and exclusion of secondary cases. This is speculation, however, and additional research is needed to illuminate sex differences.

This study extends existing literature methodologically. Specifically, the internal validity of the study was obtained by isolating age and sex from the within-group variance, and the 2 comparison samples were randomly selected stratified samples matched by age and sex with the PNE sample. The results thus extend the validity of previous, less well-controlled research on enuresis and comorbid behavior problems.6,7 This study has limitations of its own, however. It uses only 1 measure of psychopathological abnormalities and did not establish and analyze the role of wetting frequency. These limitations could and should be addressed in future research.

Nonetheless, the results suggest PNE belongs on the growing list of common biobehavioral problems (eg, enuresis, child habits) whose scientific study has yielded limited evidence of clinically significant behavioral comorbidity.12-14 Primary nocturnal enuresis infrequently is significant beyond the presenting complaint and, in most cases, is a relatively discrete entity that can be managed by the pediatrician without a psychiatric consult.

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REFERENCES