

## High Urinary N-Acetyl- $\beta$ -D-Glucosaminidase Activity and Normal Calciuria in Children with Nocturnal Enuresis

Nocturnal enuresis (NE) is the occurrence of involuntary voiding at night at 5 years, the age when volitional control of micturition is expected. NE may be primary or secondary(1). The role of hypercalciuria in the etiopathogenesis of primary NE has been discussed(2). N - acetyl-beta-D-glucosaminidase (NAG) is a lysosomal enzyme abundantly present in the cells of proximal tubule and is considered a very sensitive marker of renal tubular impairment(3). As increased urinary NAG activity has been reported in patients with hypercalciuria(3), our objective was to evaluate the urinary NAG and calciuria in patients with NE. Fourteen patients (11 boys and 3 girls, mean age  $6.8 \pm 1.6$  yr, range 5-10 yr) with primary NE were enrolled on basis of the inclusion criteria: age 5-15 yr; absence of urinary tract anomalies; absence of diabetes insipidus and diabetes mellitus; urine osmolality (morning void  $>400$  mOsm/kg); absence of urinary tract infection; no previous treatment for NE;  $>4$  bedwetting episodes within the last 14 days. The blood levels of creatinine, urea, glucose, calcium, sodium, potassium and magnesium and urinary beta-microglobulin were within the normal range. Urinary calcium/creatinine (UCa/Cr; mmol/L : mmol/L) and urinary NAG/creatinine ratios

(UNAG/Cr; nkat/L : mmol/L) were assessed in urine collected after the first morning void. To eliminate the influence of age, the obtained results of UCa/Cr and UNAG/Cr were expressed as Z-scores by the equation  $Z\text{-score} = (\text{actual of individual value} - \text{mean reference value for age}) / \text{standard deviation for age}$ . The reference values were based on previously published data on healthy Czech children(4,5). For statistical evaluation, *t*-test and linear regression were performed. UCa/Cr values were within the reference range in 13 children, and in only one patient the value exceeded the 95th percentile. The values of UCa/Cr did not differ significantly from the reference data (Table I). In 4 patients the UNAG/Cr values exceeded the age-related 95th percentile range. In the entire group of 14 patients, the UNAG/Cr values were significantly higher compared to reference values (Table I). There was no correlation between UNAG/Cr and UCa/Cr ( $r = 0.13$ ,  $P = 0.55$ ). In conclusion, hypercalciuria was not found in children with NE. The presence of elevated urinary levels of UNAG/Cr suggest that tubular dysfunction might be important in patients with enuresis.

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**TABLE I**—Results of UNAG/Cr and UCa/Cr (expressed as Z-score)

Parameter	Results (mean $\pm$ SD)	Reference value (mean $\pm$ SD)	p*
UCa/Cr (Z-scores)	0.19 $\pm$ 0.92	0 $\pm$ 1	0.77*
UNAG/Cr (Z-scores)	1.64 $\pm$ 1.65*	0 $\pm$ 1	0.003*

\* P compared to reference data(4,5).

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## **Failure of Breastfeeding—Need to Reappraise Antenatal Counseling**

A small study was conducted in our tertiary care hospital. The prevalence of top fed babies attending the hospital outpatient department was 12% (36 out of 300 mothers with babies 4 months or less), despite antenatal and post-natal advice regarding breast-feeding. We interviewed these 36 mothers of lactational failure to assess the common factor associated with failure of breastfeeding. A pretested questionnaire in regional language was used to assess the reasons why mothers started top feeding their babies. More than half of them were aware that breast milk was more nutritious and 75% had some form of education. Of these, 89% of mothers and 92% babies had no breast problems, chronic illness or congenital anomalies in baby that would interfere with breast-feeding. The majority (89%) said that they were giving top feed because they felt that their feeds were inadequate. On inquiring on why they felt it was inadequate, 59% felt that it was inadequate on expressing milk by squeezing the breast, 33% felt so because baby cried even after

nursing and 8% were told of their inadequacy by family members. All mothers practiced squeezing the breast and checking milk expression.

The commonest reason for starting top feeds was “inadequate milk expressed when breasts were squeezed”. All mothers expressed milk before nursing to check if they are having adequate secretions. They are unaware that the mechanism for sucking and extraction of milk by the baby is far more efficient than the ability of an inexperienced mother to express her milk. They are also unaware that milk secretion is unrelated to the amount they express and anxiety on observing no or “less” milk on expressing makes them doubt their ability to feed leading to lactational failure(1). However, this practice and attitude of mothers has never been recognized or addressed in any recommendations or manuals of training for breastfeeding, by pediatric academies, UNICEF or WHO(2,3,4)

Therefore, this attitude can be further studied. The mothers can be taught and reassured that they have sufficient milk so they must not squeeze their breasts to reassure themselves when the baby cries.