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Association between exclusive maternal breastfeeding during the first 4 months of life and primary enuresis

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Summary

Introduction

Although the relationship between enuresis and breastfeeding is still poorly documented in the literature, a possible association is speculated as both are strongly associated with children's development. Therefore, the main objective of this study was to evaluate whether there is an association between primary enuresis and the duration of exclusive breastfeeding.

Material and methods

This is an observational, case-control study, involving 200 children and adolescents from 6 to 14 years old, who were divided into two groups: the enuresis group (EG), composed of 100 children with primary enuresis; and the control group (CG) of 100 matched children without enuresis. The matching criteria were sex, age, and socioeconomic level. Adults responsible for each infant answered a structured questionnaire to identify biological and behavioral factor, as well as the duration of maternal breastfeeding. Children whose parents could not comprehend the questionnaire or children with neurological or psychiatric disorders or secondary enuresis were not included in the study.

Results and discussion

Evaluating the duration of exclusive breastfeeding, 72% of the subjects of the EG and 42% of the CG had been breastfed for less than 4 months ($p < 0.001$) (Figure). In bivariate analysis, there was a strong association between symptoms of enuresis with a positive family history of enuresis and duration of exclusive breastfeeding ($p < 0.001$), and also association with full breastfeeding duration ($p = 0.044$), number of children ($p = 0.045$), and parents' education ($p = 0.045$). After logistic regression, primary enuresis continued to be associated with duration of exclusive breastfeeding and family history of enuresis. The proportion of children that had been exclusively breastfed for more than 4 months was significantly higher in the CG 58% (58/100) than in the EG 28% (28/100) ($p < 0.001$, OR 4.35, 95% CI 1.99–9.50).

Conclusions

This study confirmed the association between primary enuresis and various factors that have already been studied, with the addition of a new factor, duration of exclusive breastfeeding for less than 4 months, which is strongly associated with primary enuresis.

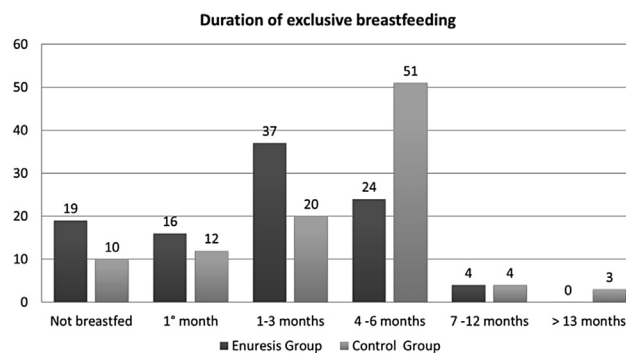


Figure Time of exclusive breastfeeding in enuresis and control groups.

Introduction

Bedwetting is a common disorder in childhood and adolescence which can often have a profound psychological and social impact on the affected children and their families, resulting in anxiety and even conflicts between members [1]. Currently, enuresis is defined by the International Children's Continence Society (ICCS) as a condition in which an intermittent urinary incontinence occurs during sleep in a child who has passed his or her fifth birthday [2].

Several factors have been demonstrated to be associated with primary enuresis. Studies indicate that the risk of having enuresis declines with increasing age [3–5], and that bedwetting is more common among boys than girls [4,6,7] and among individuals from lower socioeconomic levels [5,8]. Furthermore, other studies highlight the importance of hereditary factors [3,9,10].

Recently, the duration of breastfeeding has been associated with enuresis [11]. The World Health Organization (WHO) has shown that best feeding practices for infants and young children are among the most effective interventions to improve children's health. Breast milk promotes sensory and cognitive development of children, besides protecting them against chronic and infectious diseases [12]. A healthy diet results in proper growth and development, and optimizes the functioning of organs and systems, as well as preventing diseases in the short and long run [13]. Although the relationship between enuresis and breastfeeding is still poorly documented in the literature, a possible association is speculated as both are strongly associated with children's development [11]. Therefore, the main objective of this study was to evaluate whether there is an association between primary enuresis and the duration of exclusive breastfeeding and the total duration of breastfeeding.

Patients and methods

An observational, case-control study was performed. We hypothesized that exclusive maternal breastfeeding during the first 4 months of life is associated with a higher chance of primary enuresis. The enuresis group (EG) consisted of patients with enuresis followed at the Pediatric Urology Clinic at our university hospital. A pediatric urologist first evaluated the children, applying a structured questionnaire covering characteristic enuresis and voiding symptoms, then a complete physical examination and urinalysis were done. Then, a nurse explained the voiding and wet night diaries and gave them out. Only after the diaries were returned and the children fulfilled the inclusion criteria, were they referred to the researchers. The subjects included in this group were children and adolescents between 6 and 14 years of age with a clinical diagnosis of primary enuresis. The children included in the study were all first evaluated at the enuresis clinic to exclude those not fulfilling the inclusion criteria and then referred to the researchers. All children included were referred after the first consultation. Children and adolescents whose legal guardian showed no interest in participating in the survey or had difficulty in understanding the objectives, as well as patients with neurological, psychiatric, or renal diseases, previously diagnosed secondary enuresis or those who had

other conditions that could be concomitant with enuresis, such as diabetes or the use of diuretic medication, were not included.

For the control group (CG), the database used was that of another study ongoing in clinic. These children and schools were selected at random from all public and private schools in our town. This database represents a group of children from the same population as those of the enuretic group, with similar characteristics, and the data were collected over the same period of time. The parents of the controls answered the same questionnaire as those in the enuretic group. The database had 500 children, of whom 422 were not enuretic or had no past history of enuresis at any time of their lives. For each enuretic child included in the study, a child of the control database with the same sex, age, and socioeconomic status was selected, therefore, both groups have the same demographic characteristics.

Considering a 25% difference in the rate of breastfeeding between the two groups, test power of 90% and a level of significance of 5%, the sample size consisted of 100 subjects in each group.

Procedures

After confirming the diagnosis of primary enuresis, the child was referred to the researcher and the procedures were explained to the legal guardian, who was invited to participate, and if s/he agreed, s/he signed the informed consent form. The legal guardian was then interviewed. The questionnaire included a completed identification form and general data on the patient, which identify and provide information about biological, social, and behavioral factors; questions on the history of enuresis and voiding symptoms, with the aim of evaluating and providing more detailed information on its aspects and characteristics and other urinary symptoms; questions on aspects of breastfeeding; and questions on socioeconomic classification of the Brazilian Association of Research Companies [14]. The same forms and evaluations were applied to the subjects in the control group, who were met at public schools in our area.

After the enuresis group was formed, the subjects were paired with schoolchildren from the database. For each participant in the enuresis group a participant from the database was selected to compose the control group according to the matching variables.

This research protocol was submitted to the research ethics committee of the University Hospital/Health Care Center of the Federal University of Juiz de Fora and approved (Opinion No. 454 577/2013).

Data analysis

To verify if the proposed pairing was adequate, the statistic tests chi-square (for categorical variable – sex) and *t* student (for numeric variable age) were applied. Data were analyzed with statistical test using the chi-square nonparametric test for bivariate analysis of categorical variables. Subsequently, a multivariate analysis was performed using logistic regression to calculate the odds ratio

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