

RETENTION CONTROL TRAINING IN MONOSYMPTOMATIC NOCTURNAL ENURESIS: DOES IT MERELY INCREASE BLADDER CAPACITY?

Aims of Study

In monosymptomatic nocturnal enuresis (MNE) a small functional bladder capacity (FBC) is often considered as a major cause. It has been repeatedly suggested that normalization of the FBC may help to cure enuresis and may have an effect on the efficacy of other therapies. We evaluated whether normalizing FBC indeed leads to nighttime dryness. Furthermore we studied the determinants responsible for success in the cured patients.

Methods

55 children (32 boys and 23 girls) between 5 and 14 years old were included. They all suffered from MNE and had, according to the definition by Hjalmas (1), a bladder capacity that was too small for their age. They all had more than 2 wet nights/week. Exclusion criteria were: history of urinary tract infection, frequency (>8 voidings/day), daytime urinary incontinence, nocturnal polyuria and voiding dysfunction. Bladder retention control training was done by giving the children once daily a water load of 20 ml/kg and asking them to refrain from voiding as long as possible. This volume voided is defined as the maximal functional bladder capacity (MFBC). Furthermore all spontaneous voidings were measured during three days per week. The mean of these voidings is defined as the average functional bladder capacity (AFBC) and estimates the daily used bladder capacity. The voiding charts were every 4 weeks analysed by the doctor. If after the first 4 weeks the increase in MFBC was less than 10%, oral anticholinergics were given. Bladder capacities are standardized by conversion to a percentage of the predicted bladder capacity for age based on the formula proposed by Hjalmas. Data are presented as mean \pm standard deviation. For statistical analysis non parametrical tests were used.

Results

Baseline bedwetting frequency was 6.2 ± 1.4 nights/week and baseline MFBC $52.6 \pm 14.8\%$. After 2.8 ± 1.9 months of therapy, MFBC exceeded 100% in all patients ($124.0 \pm 18.1\%$).

After bladder training the spontaneously used percentage of the maximal functional bladder capacity significantly increased with 15% ($p=0.00005$). Enuresis was cured in 15 children (27%). In the others bedwetting decreased to 3.7 ± 2.0 nights/week. Of the 15 cured children 2 were able to sleep through the night. The other 13 woke up during the night from a desire to void.

Conclusions

Normalizing functional bladder capacity fails to achieve nocturnal continence in 73% of the children with MNE included in this study. A "normal sized" bladder does not guarantee nighttime dryness. However increasing bladder capacity by combining bladder retention control training and oral anticholinergics did induce changes in both daytime and nighttime bladder behaviour. This is illustrated by the increased percentage of the maximal bladder capacity that is actually used during the day, and by the change of nocturnal enuresis to nocturia in the cured children.

Our results show that retention control training is important in the treatment of MNE not merely to increase bladder capacity, but moreover as cognitive training, increasing the child's confidence to achieve some degree of cortical control when trying to delay bladder emptying as long as possible. The improved proprioception of lower urinary tract could also attribute to the better efficacy of other therapies once the bladder capacity is normalized. This study suggests that normalizing bladder capacity without improving the arousal from bladder sensation fails to achieve night-time continence in most.

References

1. Hjalmas K. Urodynamics in normal infants and children. *Scand J Urol Nephrol* 1988; Suppl 114: 20-7.