Therapy-resistant enuresis in adolescents, when sporting in the evening

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Aim
To investigate pathophysiological mechanisms that might explain dDAVP therapy-resistance.

Method
24-hours urine collection with timed voidings was obtained, on a day with and without evening sport training. At least 30 to 60 minutes before sleeping, two tablets of 200 µg dDAVP was given. The use of sport drinks was avoided, but there was no absolute fluid restriction in the evening. However, fluid intake was obsolete after dDAVP intake until the next morning.

Results
Diuresis-rate overnight was in 6 of 6 patients higher on the sporting than on the non-sporting evening, mainly in the first 6 hours of the night (US-U6) (Fig.1). This was associated with lower urinary osmolality (Fig.2) and higher osmotic and sodium excretion (Fig.3). 24-hours sodium and solute excretion was not different. However, on the sporting evening there was obvious a water-and sodium-retention during the evening urine collections.

Conclusion:
The observation suggests that during sport, the active water-and sodium-retention (secondary to the exercise) with associated vasodilation and increase of vaso-active hormones, results in adaptive increase in body-fluid/bloodvolume. Once vasodilation regresses, a normalization of fluid/bloodvolume is induced in the first hours of the night, probably related to increased circulating blood volume. Since this is not only a water-driven but also solute diuresis, this patients will be more likely dDAVP-resistant.