## SUMMARY

Micturition is one of the most basic physiological processes resulting in expellingurine form urinary bladder. The control of micturition in both storage and urination phases seem to be crucial for personal and social development and it's aquired around the age of 5 years. Lower urinary tract dysfunction symptoms appear to be named as one of the most frequently reported medical problems among children. Micturition disorders spectrum covers a vast group of conditions diffrent in terms of etiology, symptoms, treatment and its outcome. Monosymptomatic nocturnal enuresis (MNE) and neurogenic bladder (NB) are voiding dysfunctions but utterly distinct. MNE is characterised by involuntary urination at night without any other symptoms or urinary tract abnormalities. Term NB reffers to bladder dysfunction due to nervous system damage and malfunctional lower urinary tract response. NB in pediatric population most often is caused by congenital neural tube defects e.g. myelomeningocele.

Both types of voiding dysfunction require individual approach. Results of the treatment may be disturbed by multiple factors such as Rother nephrological issues. Hipercalciuria (HC) appears to be a frequent finding in patients suffering from micturition disorders, especially nocturnal enuresis. Disturbed electrolyte excretion increases the risk of stone formation in urinary tract. Laube et all described a metod focused on calcium oxalate stone formation risk assessment and introduced Bonn Risk Index (BRI). Patients diagnosed with NB are at high risk for renal insufficiency. Commonly used renal function assessment methods turn out to be unreliable thus new and more specific markers are being investigated. Retinol - binfing protein 4 (RBP4) is a low-molecular-weight protein synthesised in liver and fatty tissue, filtered in renal glomerules and then reabsorbed in nephron proximal tubules. In the course of studies it turned out to be one of the most sensitive and Elary indicatiors of proximal tubule function deterioration observed in e.g. tubulopaties and chronic kidney disease (CKD).

The aim of this disseartation was to evaluate urinary electrolyte excretion in MNE patients and assess their risk of calcium oxalate urolithiasis. Furthermore, taking into consideration high risk of upper urinary tract damage and its progression to CKD, renal and urinary bladder function markers in NB children were analysed in order to identify those especially prone to complications.

Study groups in both analyses consisted of 278 patients: in I study – 83 children diagnosed with MNE and 121 patients in refferencegroup, as for II study – 33 NB and 20 healthy children.

The Bonn Risk Index was assessed using the method of Laube et al. In the first step ionized calcium concentration was conducted using calcium ion-selective electrodes. The next step the native urine sample was titrated with ammonium oxalate solution until the spontaneous crystallization of calcium oxalate. Statistically significant differences between groups were observed in terms of urinary crystallisation indicators. Second study revealed significantly high er values of renal proximal tubule dysfunction marker – RBP4 – especially among patients with high intravesical pressure, those with high-level spinal cord injury or poor motor function.

Taking the aquired results into consideration, we established that patients suffering from nocturnal enuresis also experience risk of urinary calcium oxalate stones due to disturbed daily urinary electrolyte excretion. Such deposits present in urinary tract may influence MNE therapeutic outcome and contribute to other conditions e.g. more frequent urinary tract infections (UTI). Patients diagnosed with NB are especially prone to recurrent and complicated UTIs leading to upper urinary tract damage. Tubule damage markers combined with urodynamics may adequately reflect function of NB patients' urinarytract and problems clinicians face in CKD prevention.