

## **Enuresis and its treatment: a bit of history!**

Excerpt from the article of Jean-Pierre Guignard, M.D. and Honorary Professor of Paediatric nephrology, University of Lausanne

### ***Introduction***

Probably as old as the human being, enuresis was present in all the civilizations and on all continents. It affects all social classes. It has always struck imagination and given rise to diverse interpretations and led to sometimes fanciful treatments. Considered as a minor affection, nocturnal enuresis (bedwetting) is defined as involuntary micturition (urination) that occurs during sleep in children aged 5 or more.

### ***The treatment of the enuresis (bedwetting): a bit of history!***

Over the centuries, enuresis excited imagination and ended in sometimes surprising therapeutic proposals. In ancient Egypt, enuresis was treated by administering the child and his/her nursemaid a *reed based beverage* (Papyrus of Ebers, 3500 BC). In the Middle Ages Paul of Egine (620-680) recommended the administration of tonics such as *oil and mulled wine*. Thomas Phaer (1510-1560), considered as the father of the English paediatric, gave the following advice: *Take gizzards of cockerels, dry them out, reduce them to powder and administer this powder two or three times a day!* The therapy with organs in form of pulverized bladders of animals, intestines of mice or brains will be used again over the following centuries. Enuretic children were sometimes required to smash a living mouse in their hand.

In the 19<sup>th</sup> century medical treatments with strychnine or with extracts of belladonna appeared. These remedies were supposed to stimulate or to calm the bladder. In the 20<sup>th</sup> century there appeared a treatment with tricyclic antidepressants, particularly with imipramine (Tofranil®). More active than a placebo, this active substance was given up because of its side effects. The anticholinergic substances such the chlorhydrate of oxybutynine (Ditropan) must be kept for day urinary leaks.

The effectiveness of desmopressine was shown in 1977. Desmopressine (Minirin®) allows to reduce efficiently the urinary flow. This effect is similar to that of vasopressine, the natural hormone which allows to concentrate urine. It is administered at the bedtime in form of pills. The formerly available nasal spray was eliminated because of its potential side effects. Too quickly and too irregularly absorbed, it ran a risk of excessive retention of water. For children reacting favourably to desmopressine (60-70% of cases), the reaction is quick, but is regrettably followed by frequent relapses when the treatment stops.

The original concept of the pipi-stop should probably be attributed to Dr J. Nye of St Luke's Hospital in New York. In an article published in 1830, he wrote: *Fix one of the poles of an electric battery at a metallic slab placed between the shoulders of the child and the other at a dry sponge placed on the urinary meatus. As long as the sponge remains dry, nothing happens and the child sleeps. But at the moment when the child urinates, the sponge is wet and becomes an electrical conductor. The electric circuit is then completed by the body of the child. Electricity permits to activate an acoustic alarm which will wake the child up. Repeating this experience a sufficient number of times will bring the healing of the patient.* It seems that in those times the method was not successful!

Ernst Bieri from La Neuveville (Switzerland) did not know about the publication of the Dr Nye when he produced, in 1932, the first pipi-stop of modern times for his brother! It was an under-sheet run through with a metallic wire connected to a battery and an alarm. In the face of the success carried out by the first prototype, Ernst Bieri commercialized the device which

he improved during the next years. It is to his successors that we owe the wireless pipi-stop which is recommended at the present moment. The urine detector is a conductive plastic sheet which is inserted into the underwear. The signal is transmitted to the receiver, which triggers the sound alarm. The small device is very user-friendly. It is commercialized by the firm Melebi SA under the name Pipi-Stop® in the French-speaking part of Switzerland, and AntiNass® in the German-speaking part of the country.