Enuresis is an involuntary voiding of urine during sleep, with a frequency of at least 3 times per week, in children over the age of 5 years in the absence of congenital or acquired defects of the central nervous system.\(^1,2\)

The exact pathophysiology of nocturnal enuresis is not yet clear. Butler\(^3\) developed a conceptual model to understand the pathophysiology of enuresis. In this model, he uses three different aspects namely the lack in secretion of vasopressin, bladder instability and the deep sleeper (Fig. 1). A patient may have symptoms relating to more than one aspect of the model.

The treating physician should try to distinguish between these different possibilities during history taking and examination.

Signs and symptoms indicative of bladder instability include:\(^3\)
- frequent daytime voiding – more than 7 times per day
- a sense of urgency
- unsuccessful voiding manoeuvres
- low or variable functional bladder capacity
- low voided volumes
- multiple wetting at night
- variability in the size of the wet patch
- waking after wetting.

Clinical signs of low vasopressin (AVP) might include:
- wetting soon after going to sleep
- consistently large wet patches
- enuretic episodes in the first third of the night.

The degree of arousability can be determined clinically through a series of questions:
- frequency of waking from sleep and voiding in the toilet
- the occurrence of waking with a reluctance to leave the bed to void
- the ability to wake to internal (i.e. pain) or external (i.e. noise) signals.

For many parents it is often not possible to answer these questions, as they are not always familiar with their child’s habits. It is therefore necessary to ask them to complete an enuresis diary for a week before the next scheduled visit. Table I gives a diagnostic work-up of nocturnal enuresis. Additional and invasive diagnostic procedures are only indicated in selected cases with suspicion of other pathology.

Table I. Diagnostic work-up of nocturnal enuresis

<table>
<thead>
<tr>
<th>History</th>
<th>Confirm</th>
<th>night-time wet episodes only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exclude</td>
<td>daytime symptoms (urgency, frequency) urinary tract infections other pathology</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bladder diary</th>
<th>Confirm</th>
<th>night-time wetting fluid intake</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exclude</td>
<td>night-time urine output</td>
<td></td>
</tr>
<tr>
<td>day-time incontinence frequency constipation/soiling</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Physical examination</th>
<th>Confirm</th>
<th>normal anatomy, psychomotor development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exclude</td>
<td>anatomical abnormalities (genital area and back), neurological abnormalities (reflexes)</td>
<td></td>
</tr>
</tbody>
</table>
TREATMENT

It is important to make the child part of the treatment decisions, and follow-up visits should be at regular intervals. In your feedback try to concentrate on positive progress and offer solutions to the negative aspects.

Enuresis alarm

Enuresis alarm therapy remains the most effective way to treat enuresis. Intervention with the alarm is associated with a nine times less likelihood of relapse than antidiuretic therapy. Metaanalysis showed that alarm therapy has a 43% lasting cure rate. Alarm therapy should be reserved for the child 7 years or older and only in a well-motivated family. Response is slow and might take up to 8 weeks.

The alarm alerts and sensitises the child to respond quickly to a full bladder and converting the signal from urination to one of inhibition of urination and waking. An additional interesting finding is that the nocturnal bladder capacity increases in patients responding to this form of treatment.

Desmopressin

Desmopressin is the treatment of choice in the patient with high urine output at night. The response rate is high in these patients, but so is the relapse rate. With the structured withdrawal programme developed by Butler, the relapse rate can be improved. It is important that patients are well informed as to the correct use of desmopressin — if taken orally, the tablet should be taken 1 hour before a meal or 2 hours after a meal. It is important that fluid intake should be stopped 1 hour before administering the medication. This precaution is to prevent the development of hyponatraemia.

Anticholinergic drugs

In patients with signs of bladder instability, anticholinergic drugs should be considered. Side-effects like a dry mouth or flushing of the face can develop.

Tricyclic antidepressants

Because of the potential lethal side-effects of imipramine, these drugs cannot be recommended for treatment of this non-lethal disorder. If you do prescribe them, an ECG should be done to exclude dysrhythmias.

Table II depicts the management of nocturnal enuresis.

Nocturnal enuresis can be managed successfully only if a caring and sensitive physician is prepared to spend time with the child and his/her family. Tailoring the correct treatment option for that particular child will improve the response rate.

References available on request.

JC van Dyk

Table II: Management of nocturnal enuresis