

# Neurogenic Bladder

**Neurogenic bladder** is a collective term for disorders of the collecting or excretory function of the bladder that have a neurological etiology. The result of these disorders may be incontinence, urinary retention or a combination of these. The clinical picture depends on the site of the damage and its relationship to the urinary centers in the CNS.

## Micturition Centers

### Pontine center

Center localized in the brain stem area has an effect on the function of *m. sphincter uretrae externus*. With its stimulation, there is a relaxation of the sphincter and micturition (excretory phase). At the time when urine is collected into the bladder, the center is inactive. Information to activate it is obtained with the help of volumoreceptors in the wall of the bladder, which signal an increased filling. In addition, micturition is supported by increased parasympathetic activation.

Center is located within the sacral spinal cord.

Localization in the area of the spinal cord, which corresponds to segments S2 to S4. Its regulation of micturition is mediated by *nn. pelvici*, respectively their parasympathetic fibers. Independently of the human will, it acts on *the m. detrussor vesicae urinae*, thereby causing micturition.

Sympathetic innervation of the bladder arises from the paravertebral ganglia of the lumbar region. It is led by *n. hypogastricus* and controls *m. sphincter uretrae internus* and causes closure of the bladder neck.

## Clinical manifestations according to the localization of damage

### Suprapontin involvement (hyperreflexic bladder)

- **Pathophysiology** - There is a decrease in the influence of the pontine center and increased function of the detrusor, which is not inhibited by the higher brain centers. Coordination between sphincters and detrusor is mostly preserved.
- **Etiology** - Ictus, MS, Alzheimer's disease, Parkinson's disease, etc.
- **Influence on micturition** - The patient suffers from imperative micturition; urge to urinate has already with a small volume of urine in the bladder; urinate often.

### Disability between the pontine and sacral centers

- **Pathophysiology** - Increased detrusor function due to impaired inhibition from higher brain centers, but coordination of sphincters and detrusor is already violated.
- **Etiology** - Traumatic lesions, MS, etc.
- **Effect on micturition** - Due to dyssynchronization, urinary retention may occur.

### Peripheral involvement from the sacral center (autonomic bladder)

- **Pathophysiology** - Due to a malfunction of the micturition reflex, higher centers do not receive information from the bladder area. The musculature of the bladder is permanently weak, there is a dilatation and subsequent retention of urine.
- **Etiology** - Spinal cord lesions, etc.
- **Effect on micturition** - Paradoxical ischuria, meaning the bladder is crowded, but there is no micturition and urine drips uncontrollably.

## Links

### Related articles

- Urination
- Micturition reflex
- Paradoxical ischuria
- Brainstem
- Pons Varoli
- Stroke
- Alzheimer's disease
- Parkinson's disease
- Multiple sclerosis

## Source

- HUFSCHMIDT, Andreas. *Neurologie compact*. 5. vydání. 2009. ISBN 978-3-13-117195-5.