Neurogenic Bladder

Updated August 8, 2020

ETIOPATHOPHYSIOLOGY

1. \textbf{Clinical Features}:

2. \textbf{Diagnosis}:

3. \textbf{Treatment}:

4. \textbf{Complications}:

5. \textbf{Neurogenic Bladder} - \textit{cervical dysfunction resulting from neurologic disorder} (brain = spinal cord + local nerve supply to urinary bladder and its outlet). For anatomy -- see p. 2432 >>

\begin{itemize}
  \item Bladder activity can be \textit{hypoactive} (flaccid) or \textit{spastic} (contracted).
\end{itemize}

\section*{ETIOPATHOPHYSIOLOGY}

*Presence or absence, respectively, of bulbocavernous and anal wink reflexes.

\subsection*{Upper Motor Neuron Type (i.e., \textit{Reflex})} neurogenic bladder:

\begin{itemize}
  \item Lesions of \textit{medial longitudinal system} (only voluntary control, loss) \rightarrow \textit{Uninhibited Bladder} with intact detrusor-sphincter synergy (detrusor hyperreflexia without outlet obstruction) \rightarrow \textit{incidental incontinence without retention}; (incontinencia urinaria intermittens).
  \item H. external urinary collection devices; no risk of UTI.
\end{itemize}

\subsection*{Lower Motor Neuron Type (i.e., \textit{Non-Reflex})} neurogenic bladder:

\begin{itemize}
  \item Lesions of \textit{medial} \textit{frontal} \textit{region} \rightarrow \textit{incontinencia urinae vera}.
  \item B. Lesions of \textit{spinal cord} (interrupt reticulospinal pathway from \textit{brain to lower spinal cord}):

\begin{itemize}
  \item \textit{Spinal Shock} stage: \textit{spinal automatism} (begins within several days of spinal cord injury) -

\begin{itemize}
  \item \textit{Automatic Parasympathetic} bladder: \textit{detrusor-parasympathetic dysynergia} (detrusor hyperreflexia with outlet obstruction) - rather than relaxing when bladder contracts, outlet contracts \rightarrow \textit{incontinence with urgency and frequency} (spastic bladder reflexively contracts at lower volumes), \textit{urinary retention} \rightarrow \textit{UTI}, vesico-urethral reflux (\rightarrow \textit{hydromephrosis} \rightarrow \textit{renal failure}), \textit{autonomic dysreflexia}. \textit{See also p. 2432}.
\end{itemize}
  \item \textit{Spinal Automatism} stage (begins within several days of spinal cord injury) -

\begin{itemize}
  \item \textit{Automatic} (\textit{sympathetic}) \textit{bladder} with \textit{detrusor-sphincter dysynergia} (detrusor hyperreflexia with outlet obstruction) - relaxes the bladder when it is not necessary,\textit{bladder contracts at lower volumes}, \textit{urinary retention} \rightarrow \textit{UTI}, \textit{vesico-urethral reflux} (\rightarrow \textit{hydromephrosis} \rightarrow \textit{renal failure}), \textit{autonomic dysreflexia}.
\end{itemize}
\end{itemize}

\section*{CLINICAL FEATURES}

Various types of \textit{urinary incontinence}. See p. 2590 >>

\section*{DIAGNOSIS}

1. Neurologic examination -- sensory and motor status below lumbar level, anal sphincter tone, anal wink, cremaster, bulbospongious reflexes.

2. Serial cystometrogramy with sphincter EMG.

3. Serial imaging (IVU, ultrasonography, cystography, urethrography).

N.B. underlying pathophysiology correlates poorly with specific symptoms experienced by patient, so periodic urodynamic evaluation is required to assess detrusor and sphincter function!

\section*{TREATMENT}

See p. 2590 >>

\textbf{Total recovery is uncommon!}

\section*{COMPLICATIONS}

Bladder dysfunction predisposes to \textit{urinary calculi} and \textit{urinary tract infection}.

\begin{itemize}
  \item Bacteriuria due to asymptomatic colonization is extremely common and is generally not treated.
  \item UTI may present only as \textit{foul-smelling} (\textit{urine} or \textit{change in voiding pattern}; development of \textit{high fever} or other systemic signs often indicates pyelonephritis).
  \item Prophylaxis with antibiotics is of little value.
\end{itemize}

N.B. significant post void residual urine \rightarrow increased risk for UTI; UTIs may be secondary to \textit{urinary calculus} (immobilization \rightarrow \textit{urinary Ca excretion} and \textit{urinary stasis} \rightarrow \textit{calcii} \rightarrow \textit{UTI}).

\section*{Complications of \textit{detrusor-sphincter dysynergia}}:

1. Severe bladder trabeculation, diverticula, "Christmas tree" bladder deformation \rightarrow \textit{detrusor decompensation} \rightarrow \textit{overflow incontinence}.

2. Vesico-urethral reflux \rightarrow \textit{renal damage} (\textit{hydromephrosis}).

N.B. intravesical pressures > 40 cm \textit{H}_2\textit{O} \rightarrow \textit{damage to upper urinary tract}.

\section*{BIBLIOGRAPHY}

For ch. "Urology & Nephrology, Gynecology & Obstetrics" -- follow this \textbf{LINK} >>