Name: Akintunde Dolapo Ayomide.

Matric No:18/mhs02/033.

Level/Department: 200L/Nursing.

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QUESTION.

WRITE A SHORT NOTE ON MICTURITION.

ANSWER.

Micturition is a process by which urine is voided from the urinary bladder. It is a reflex process. However, in grown up children and adults, it can be controlled voluntarily to some extent. The functional anatomy and nerve supply of urinary bladder are essential for the process of micturition.

MICTURITION REFLEX.

Micturition reflex is the reflex by which micturition occurs. This reflexs is elicited by the stimulation of stretch receptors situated on the wall of urinary bladder and urethra. When about 300 to 400 mL of urine is collected in the bladder, intravesical pressure increases. This stretches the wall of bladder resulting in stimulation of stretch receptors and generation of sensory impulses.

Pathway for Micturition Reflex: Sensory (afferent) impulses from the receptors reach the sacral segments of spinal cords via the sensory fibers of pelvic (parasympathetic) nerve. Motor (efferent) impulses produced in spinal cord, travel through motor fibera of pelvic nerve towards bladder and internal sphincter. Motor impulses causes contraction of detrusor muscle and relaxation of internal sphincter so that, urine enters the urethra from the bladder.

Once urine enters urethra, the stretch receptors in the urethra are stimulated and send afferent impulses to spinal cord via pelvic nerve fibers. Now the impulses generated from spinal centers inhibit pudendal nerve. So, the external sphincter relaxes and micturition occurs. Once a micturition reflex begins, it is self-regenerative, i.e. the initial contraction of bladder further increase in sensory impulses from the bladder and urethra. These impulses, in turn cause further increases in reflex contraction of bladder. The cycle continues repeatedly until the force of contraction of bladder reaches the maximum and the urine is voided out completely.

During micturition, the flow of urine is facilitated by the increase in the abdominal pressure due to the voluntary contraction of abdominal muscles.

Higher Centers for Micturition: Spinal centers for micturition are present in sacral and lumbar segments. But, these spinal centers are regulated by higher centers. The higher centers, which control micturition are the two types, inhibiting centers and facilitatory centers.

Inhibitory centers for micturition; Centers in midbrain and cerebral cortex inhibit the micturition by suppressing spinal micturition centers.

Facilitatory centers for micturition; Centers in pons facilitate micturition via spinal centers. Some centers in cerebral cortex also facilitate micturition.

MICTURITION REFLEX.

Filling of urinary bladder

TO

Stimulation of stretch receptors

TO

Afferent impulses pass via pelvic nerve

TO

Sacral segments of spinal cord

TO

Efferent impulses via pelvic nerve

TO

Contraction of detrusor muscle and relaxation of internal sphincter

TO

Flow of urine into urethra and stimulation of stretch receptors

TO

Afferent impulses via pelvic nerve

TO

Inhibition of pudendal nerve

TO

Relaxation of external sphincter

TO

Voidingof urine

APPLIED PHYSIOLOGY- ABNORMALITIES OF MICTURITION.

1. Atonic Bladder - Effect of Destruction of Sensory Nerve Fibers.

2.Automatic Bladder.

3. Uninhibited Neurogenic Bladder.

4. Nocturnal Micturition.