Urinary System

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Urinary System

An organism is a beautiful constellation of cells, tissues and organ systems. The malfunctioning of even one of the cells affects the organism. Each tissue is vital, and each organ plays a pivotal role in the healthy functioning of an organism.

Another name of the urinary system is the renal system. It is one of the organ systems of the human body that keeps us working at our best. The renal system eliminates the waste materials from the body, keeps a check on the levels of electrolytes and metabolites and regulates the blood pressure, blood volume, and blood pH level. The urinary system consists of kidneys, urethra, renal pelvis, ureter, and urinary bladder. The fundamental purpose of the renal system is to remove the waste materials from the blood via the formation of urine. The urinary tract starts at the kidneys. The nephron is the structural unit of the kidney. Apart from filtering the blood, it also regulates the concentration of minerals like sodium, maintains the concentration of water. For example, if we drink a lesser quantity of water, then to maintain the level of water in our body, a lesser amount of urine is produced.

Firstly, the blood is filtered by Bowman’s capsule where the osmotic pressure separates the water molecules and ions from the blood. The amount of filtrate produced every day is around 180 liters. However, only 1% of the total filtrate is passed as urine and the rest 99% gets reabsorbed in the blood. The unfiltered blood enters the kidneys through the renal artery and the blood after filtration leaves through the renal vein. The kidneys clean the blood and after the filtration and processing, the blood leaves the kidneys and goes to the urinary bladder. After reaching the urinary bladder, it is expelled from there in the form of urine. The ureters are the tubes made up of muscle fiber that carries the urine towards the urinary bladder. The length of the ureter is about 8 to 10 inches. The urinary bladder is an organ that is placed between the pelvic bones. A healthy urinary bladder has a capacity of storing ½ liter of urine for 2-5 hours without any discomfort.

The hormones that regulate the urinary system are aldosterone, antidiuretic hormone, and the parathyroid hormone. Aldosterone maintains blood pressure. It maintains the levels of sodium, potassium, and water to regulate the pressure of blood. It enhances the reabsorption of water and ions in the kidney. The other hormone is the antidiuretic hormone which aids in vasoconstriction and the maintenance of water levels in the body. The main function of the urinary system is the urination.

While in almost all the mammals the urination is a voluntary action, in some elderly people the passing of urine might be involuntary and as a result of some strenuous exercise as the muscles tend to grow weak in old age. The urinary system for males and females is quite similar except for the measurement of the urethra. In females, The length of urethra is around one to two inches in females, while it is about eight inches long in males. A normal human produces 800 to 2000 milliliters of urine a day. The diseases related to the malfunctioning of urine are interstitial cystitis which results in immense pressure and pain in the bladder. Another thing that occurs due to the malfunctioning of the urinary system is the formation of stones in kidneys. The main reason for kidney stones is drinking an insufficient amount of water which causes concentrated lumps in the kidney. Kidney failure and Bladder cancer are major chronic diseases that can be life-threatening. The urinary system is one of the prime parts of the body and the key to a healthy urinary system is to drink lots of water.