Human urinary system parts and functions

Introduction

The human urinary system has many different organs and each does different functions. It consists of two kidneys, two ureters, the urinary bladder, two sphincter muscles, and a urethra. These organs, tubes, and muscles filter out waste products from the bloodstream which are then expelled as urine. Our body takes nutrients from food and converts them into energy. The urinary system works with the lungs, skin, and intestines to keep the chemicals and water in balance. It removes waster products knows as urea from the blood. Urea is produced when foods containing protein, such as meat, poultry, and certain vegetables, are broken down in the body. It is then carried into the bloodstream to the kidneys by the renal arteries. The urinary system maintains an appropriate fluid volume by regulating the amount of water that is excreted in the urine. It also regulates the concentrations of various electrolytes in the body fluids and maintains normal pH of the blood. It also controls the red blood cell production by secreting the hormone erythropoietin. It plays an important role to maintain normal blood pressure by secreting the enzyme renin.

Summary

The kidneys are bean shaped organs, purplish brown sort of color about the size of our fist. Each kidney is about 11cm long, 6cm wide and 2. 5cm thick. They are located near the middle of the back, just below the rib cage. The location of the right kidney is usually lower than the left kidney because of the liver position. Each kidney is surrounded by a tough fibrous capsule, which is divided into two layers. The outside layer is cortex and inside layer is medulla. Each kidney is made of about one million nephrons. A nephron is

a basic filter unit of the kidney which maintains water salt balance, and also regulates the amount of urea. Each nephron consists of a ball formed of small blood capillaries, called a glomerulus, and a small tube called a renal tubule. It acts like a sieve which keeps all necessary components in the bloodstream. It allows waste products and fluids to pass through in the urinary system. The kidneys identify and sort out useful elements like sodium and potassium, and send them back to the blood. They regulate and maintain the level of necessary chemicals to remain healthy. They also release certain hormones like ‘ erythropoietin’ and ‘ renin’. ‘ Calcitriol’ is also released by kidneys, which helps to regulate calcium from bones and maintains proper level of chemicals in the body. The ureters are cylindrical in shape and are located near the lower end of the renal pelvis. They are not organs but are an essential part of the urinary system. The ureters have very narrow thick walls. It consists of three coats of tissues: mucosal, fibrous, and muscular layers. There are two ureters. The right one is slightly shorter than from the left. Ureters carry urine from the kidneys to the bladder. It works like a toothpaste tubes, squeezing urine from the kidneys. The ureter is about a one foot long and less than a half inch wide. Ureters can be considered as a one-way street where urine always flows the same way. It acts as a valve to prevent the back flow of urine into the kidney. If urine backs up, a kidney infection can develop. About every 10 to 15 seconds small amounts of urine are emptied into the bladder from the ureters. The urinary is a triangle shaped hollow muscular organ located in the lower abdomen. It is supported and held in place by ligaments that are attached to other organ and the pelvic bones. It stores urine until we are ready to go to bathroom to empty it. The bladder itself is a muscle too. The bladder’s walls

relax and expand to store urine, and contract and flatten to empty urine through the urethra. The typical healthy adult bladder can hold up to 16 fluid ounces (500 ml) of urine comfortably for 2 to 5 hours. The muscles in the bladder neck are called sphincters. The sphincters muscles help to keep urine from leaking by closing tightly like a rubber band around the opening of the bladder. When the volume of urine in the bladder reaches its limit, the brain sends impulses to the internal sphincter that the bladder is full which makes the sensation to urinate becomes stronger. As the bladder contracts or squeezes, the urine is released out through the urethra. The tissues of the bladder are isolated from urine and toxic substances by another layer which prevents bacteria to grow on the bladder wall. The bladder layers are fascial, muscular, submucous, and mucous.

Conclusion

Urethra is the tube. It carries the urine from the bladder to the exterior. The external urethral sphincter is made of the surrounding skeletal muscle of the pelvic floor, and is under voluntary control. Female urethra is shorter than male. The female urethra is 1 to 1. 5 inches (2. 5 to 4 cm) long and is anterior to the vagina. In men, the urethra is about 7 to 8 inches (17 to 20 cm) long. The urethra has an excretory function in both sexes to pass urine to the outside, and also a reproductive function in the male, as a passage for semen. The female urethra goes right from the bladder to the outside whereas male urethra passes through the prostate gland. The urethra is located just below the bladder. The brain signals the bladder muscles to tighten, which squeezes urine out of the bladder. At the same time, the brain signals the sphincter muscles to relax to let urine exit the bladder through

the urethra. When all the signals occur in the correct order, normal urination occurs. Problems in the human urinary system can be caused by aging, illness or injury, and toxicity. Once person gets older, the functioning of the kidneys may decline. The muscles of the ureters, bladder, and urethra may lose their strength that may cause urinary infections. Kidney can not filter the blood completely because of illness and injury. It may be damaged by certain substances such as medications and poisons.