

Hydronephrosis

Hydronephrosis is a condition in which the renal pelvis and calyces dilate as a result of urinary tract obstruction, causing urine to accumulate. Congenital malformations, kidney stones, and even retroperitoneal fibrosis are among the causes of hydronephrosis. The dilation occurs proximal to the actual obstruction or pathology and can affect just one kidney or both. Bilateral hydronephrosis would suggest there is an obstruction further along the urinary tract, for example, the prostate or bladder. Notably, if this occurs in both kidneys, the serum creatinine will increase.



PLAY PICMONIC

Pathophysiology

Dilated Renal Pelvis and Calyces

[Dyed Kidney with Pelvis](#)

The dilation of the renal pelvis and calyces occurs proximal to the obstruction.

Mechanism

Nephrolithiasis

[Kidney Throwing Stones](#)

Nephrolithiasis, also known as renal stones, is the most common cause of acute unilateral hydronephrosis in adults. Kidney stones can cause hydronephrosis by obstructing urine flow to the bladder.

Benign Prostatic Hyperplasia (BPH)

[Bunny Plum Hiker-plates](#)

Benign prostatic hyperplasia (BPH) can cause bilateral hydronephrosis due to the enlarged prostate preventing urine from passing through the urethra. Hydronephrosis occurs when the prostate compresses the urethra, causing complete obstruction.

Cancer

[Tumor-guy](#)

Cancers that occur in the urinary tract or surrounding the urinary tract can lead to the development of hydronephrosis. Some of the examples include renal cancer, bladder cancer, and uterine cancer.

Vesicoureteral Reflux

[Vest-guy Holding a U-wreath](#)

Vesicoureteral reflux occurs when urine flows backward from the bladder through the ureters to the kidney. It is a congenital malformation, and is therefore seen in young children. Patients with vesicoureteral reflux have an increased risk of urinary tract infections and recurrent pyelonephritis.

Retroperitoneal Fibrosis

[Retro-man Holding a Pear](#)

Retroperitoneal fibrosis is the abnormal scarring of the abdominal cavity. Scarring in the ureters can cause a unilateral or bilateral blockage, resulting in chronic hydronephrosis.

Signs and symptoms

Flank Pain

[Flank Pain-bolt](#)

The main symptom of hydronephrosis is flank pain. Patient will also experience pain during the flank percussion, also known as costovertebral angle tenderness.

Nausea and Vomiting

[Vomiting](#)

Nausea and vomiting can occur in individuals with hydronephrosis.

Postrenal AKI

[Post-renal-guy with Acute Angle](#)

Hydronephrosis can lead to a postrenal acute kidney injury (AKI). Serum creatinine levels can rise if both kidneys are obstructed or if one solitary kidney is obstructed.