Kidney scanning

**Anatomy:**

There are two kidneys ( Right and Left).The kidneys are lying in either side of vertebral column in the upper posterior abdomen (T12-L4).The longitudinal axis of kidneys is obliquely oriented and the inferior pole lying more laterally and superior pole medially.

The right kidney is slightly lower than the left kidney.

The right kidney is lying posterior to lower portion of the liver and the left kidney lying posterior to the lower spleen.

The average size of the kidney in adult is 9-12 cm in length and 4-5 cm in width.

The medial surface of the kidney has a notch called Hilum through which renal vessels pass and pelvis of ureter begins.

The layer that surrounds the kidney is called renal capsule.

On longitudinal section the kidney divided into two parts:

1-Renal Parenchyma:

A /cortex: which contain of nephron (urine formation)

B / medulla.

2. Renal sinus: cavity within the kidney which is occupied by renal pelvis, renal calyces, blood vessels, nerves and fat.



Appearance:

Renal capsule is echogenic (hyper echoic ‘bright’)

Renal parenchyma (cortex and medulla together) is hypo echoic.

Renal sinuses is echogenic (hyper echoic ‘bright’)

Patient preparation:

Better to be fasting before the examination to reduce gases.

Probe:

(2-5) MHz probe is used.

Patient position:

Patient supine and probe moving subcostal (below the rib)

Also posterior and oblique position is done.

Breathing technique:

Deep held inspiration.

Procedure (of RT kidney scanning):

1. Prepare the room, open the machine and choose the correct probe for scanning.

2. Patient is supine with extending legs.

3. Begin longitudinal scanning with probe perpendicular to the right kidney area(in the most right lateral edge of costal margin)and moving subcostal (to see the whole right kidney).

We can see in this view:

A. Renal capsule and renal sinuses hyper echoic than the liver.

b. Renal parenchyma hypo echoic than the liver.

4. Then take the measurements for the right kidney (length and width).

5. Move the probe superior to see the superior pole of the kidney then move it inferior to see inferior pole of the kidney.

(We can see the superior pole of the right kidney near the lower portion of the liver).

6. Rotate the probe 90 degree into transverse scanning (we see the right kidney in transverse plane).

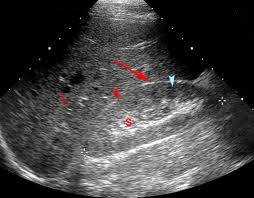
7. Begin scanning from the lower portion of the Liver (below the costal margin) by moving probe slowly subcostal from superior to inferior:

(First we see the superior pole of the right kidney).

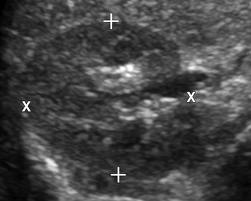
8. Continue moving the probe slowly to the inferior to see the medial portion of the right kidney and hilum (through which renal vessel pass).

9. Then take the measurement for the right kidney in the medial portion.

10. Then from medial portion of the right kidney move the probe inferiorly until see the inferior pole.



RT kidney measurement (long)



RT kidney measurement (transverse)