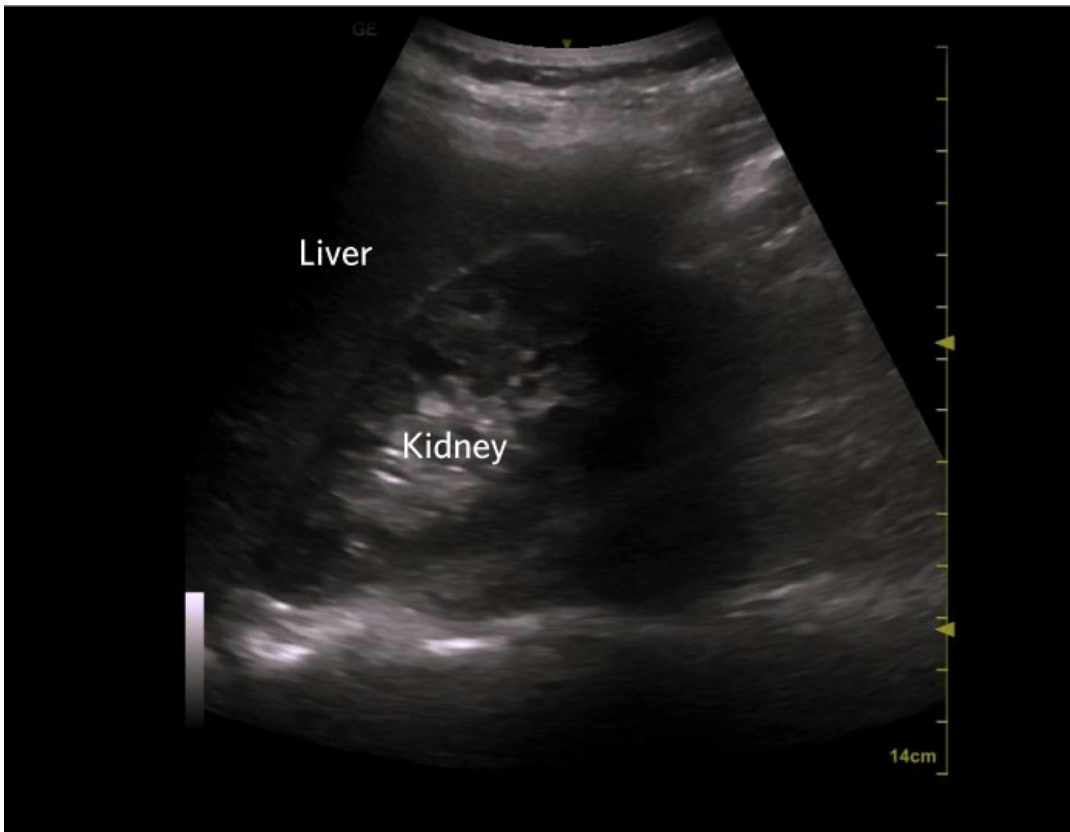


How-To Guide

Ultrasound of the Kidney for Hydronephrosis

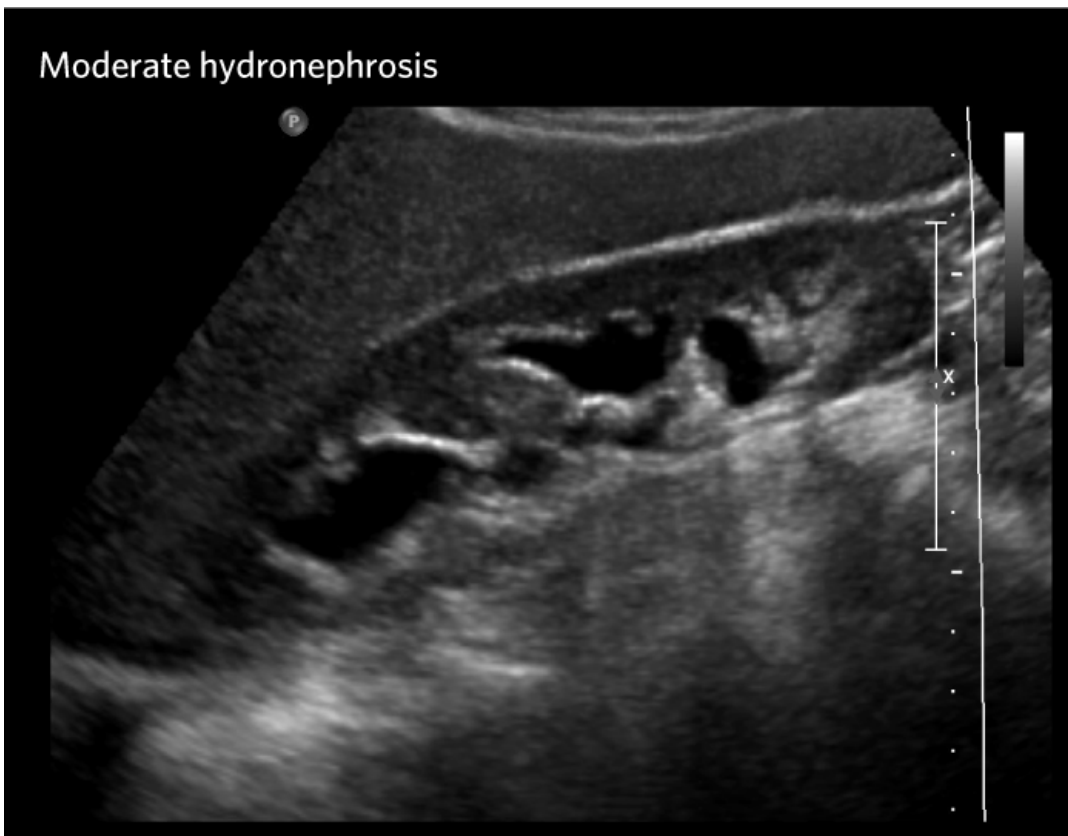


How to do it:

1. Lay the probe in your open palm, and place your thumb on top of the probe. The probe indicator should point towards the patient's head.
2. Start with your probe hand near the bed, in the area of the right flank, at level of the xiphoid process.
3. Locate the area of interest, the kidney, usually by sweeping the probe towards the ceiling and towards the bed.
4. Find the best view of the kidney, then visualize the entire collecting system by sweeping through the entire kidney.
Look for the presence of moderate or severe hydronephrosis.

Updated: September 25, 2020

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How to do it better:

- Have a strategy to eliminate or minimize rib shadows. You can move the probe up or down an intercostal space, or rotate the probe between ribs.
- Once you have swept the collecting system, rotate the probe 90 degrees and sweep through the entire kidney once again, to confirm your findings
- If you believe you have a positive finding, always compare it to the other kidney for confirmation.

How to do it safely:

When you find hydronephrosis, do not just assume it is unilateral. Always check the other side.

Ensure that you are looking only for moderate or severe hydronephrosis, as this will minimize false positive and false negative findings. *Studies have shown that mild hydronephrosis is not reliably diagnosed on POCUS, so don't go there.*

Incidental findings in kidney scans are very common. Learn to recognize renal cysts because you will see them frequently.

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Simple renal cysts are round, uniformly black inside, and have no internal echoes. Simple cysts are generally benign, and just need an elective formal study to confirm your assumption.

If you see septations, or any twinkles/artifact arising from the cyst wall, this is not a simple cyst. Get a formal study soon.

Be aware of sources of false positive and false negative findings for hydronephrosis:

False Positive Findings:

- Renal cysts can be confused with hydronephrosis, but closer inspection will confirm that they appear in the cortex of the kidney, not the bright echogenic collecting system.
- Parapelvic cysts are a source of false positive findings, but they are uncommon.

False Negative Findings:

- If you do not see moderate or severe hydronephrosis, remember that the patient might still have mild hydronephrosis.

How to use this in practice:

The main indication for this scan is to diagnose suspected renal colic.

With moderate clinical suspicion for the diagnosis AND a positive scan for *unilateral* moderate or severe hydronephrosis, you can feel quite confident about the diagnosis. This is especially so if you find hematuria.

Conversely, your patient can still have stones in the absence of moderate or severe hydronephrosis, so a negative scan does not rule out renal colic.

Be extra cautious diagnosing renal colic in patients over 50, even with hematuria present, if you have a negative scan. Remember the many conditions that mimic renal colic and that have high morbidity rates: the aorta, gallbladder, and intestines.

Consider checking for hydronephrosis in cases where it could really matter and you don't usually think about it.

Patients with pyelonephritis AND urinary obstruction get very sick very quickly. Consider scanning any patient you diagnose with pyelonephritis for hydronephrosis. If you find it, get an emergent urology consult.

Patients with significant urinary retention may develop bilateral hydronephrosis, commonly men with severe prostatic hypertrophy. Severe hydronephrosis can lead to irreversible kidney injury over a period of weeks and warrants an urgent urology referral.

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