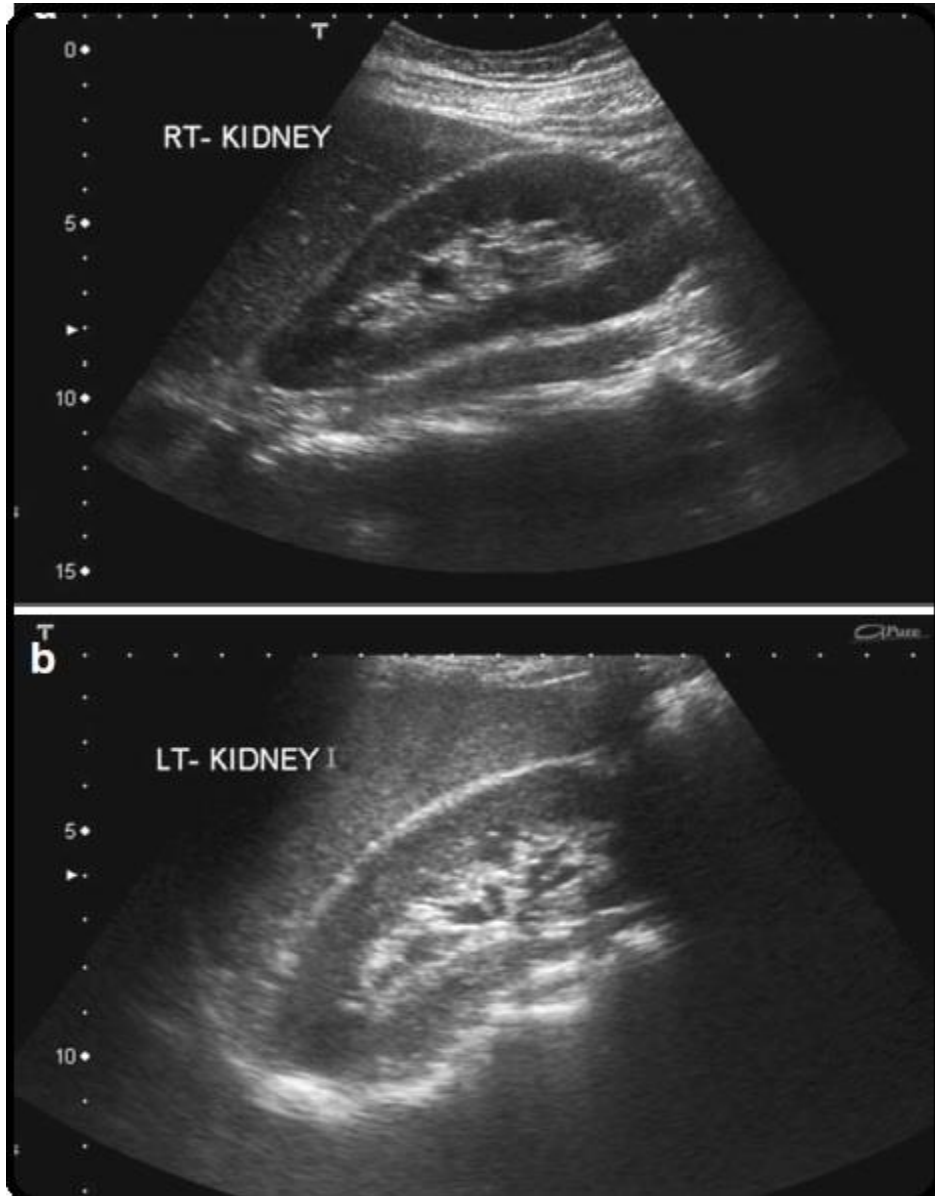


Case 1-3-9

1. Describe the images shown and their orientation.
2. What are the normal greyscale (i.e. not Doppler) ultrasound appearances of the kidneys and ureters?
3. Image 2.1.2 is the cut surface of a normal kidney, label 1–7.



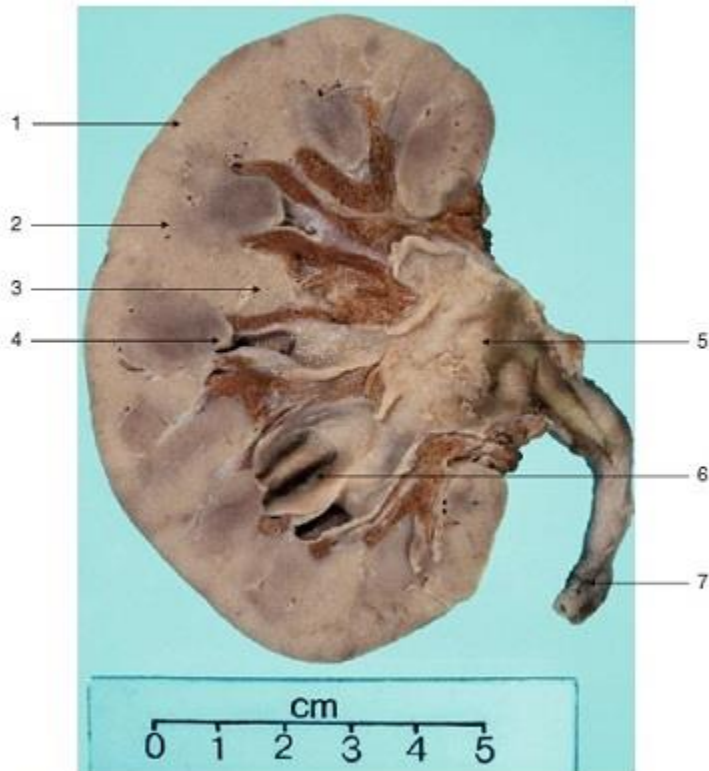
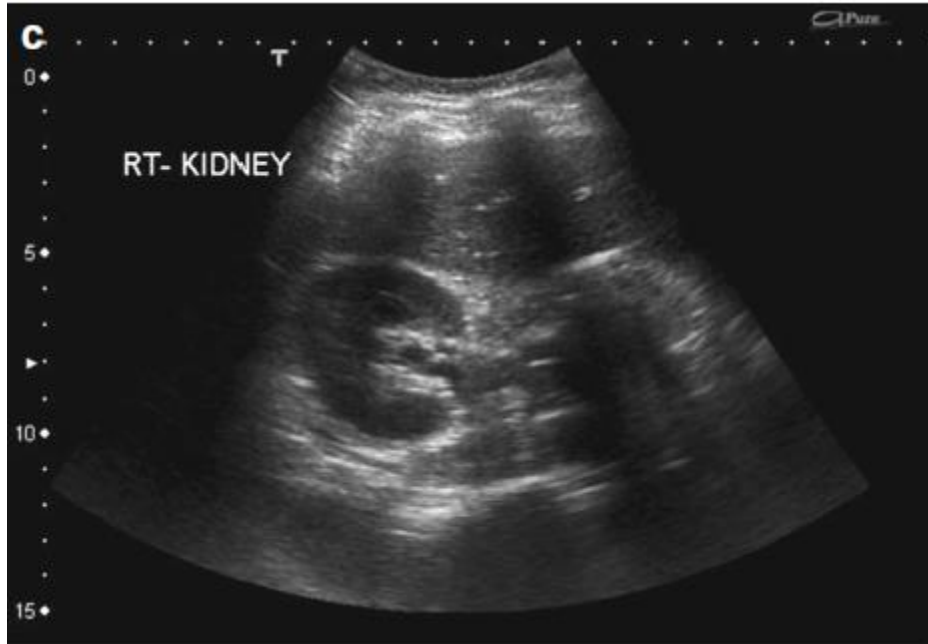


Fig. 2.1.2

Answers to Case 2.1

1. Figure 2.1.1a-c are longitudinal ultrasound images through a normal right (a) and left (b) kidney, and transverse image through the right kidney (c). The left side of the image corresponds to the cranial or right side of the patient, depending on whether the probe is orientated longitudinally or transversely. Lying immediately above/adjacent to the kidney on the right is the liver, and on the left the spleen.

2. The kidneys have a hypoechoic (i.e. darker) outer cortex which should be iso- or hypoechoic compared to the adjacent liver or spleen. If the cortex is hyperechoic, this is a non-specific sign of renal parenchymal disease. In thinner patients the medullary

pyramids may be distinguished from the renal cortex, lying more centrally adjacent to the renal sinus. These are normally hypoechoic compared to the cortex.

The renal sinus, seen centrally/medially, is hyperechoic due to its high fat content.

The renal vessels and pelvicalyceal system may be seen within this region.

Non-dilated ureters are not usually well seen on ultrasound except at the vesicoureteric junction.

3. Cut surface of a normal kidney showing (1) renal cortex (2) medullary ray (3) column of Bertin (4) renal papilla (5) renal pelvis (6) calyx (7) ureter.

Hangiandreou NJ. AAPM/RSNA physics tutorial for residents: topics in US. B-mode US: basic concepts and new technology. *Radiographics* . 2003;23: 1019–1033 .