A rare testicular vein anatomical variant contributes to right-sided varicocoele formation and leads to the diagnosis of renal cell carcinoma

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DESCRIPTION

A man in his 60s presented for a testicular ultrasound due to asymptomatic scrotal swelling. Ultrasound showed a right-sided varicocoele (figure 1). A varicocoele is an abnormal dilatation of the pampiniform venous plexus in the scrotum. A renal ultrasound demonstrated a heterogeneous mass arising from the right kidney (figure 2). Histology subsequently revealed a renal cell carcinoma. CT identified duplication of the right testicular vein (figure 3). The first emptied into the inferior venacava (IVC) as expected. The second had a tortuous course arcing over the upper pole of the right kidney and emptying into the right renal vein (figure 4). Tumour extension into the right renal vein obstructed inflow from this accessory testicular vein and contributed to varicocoele formation (figure 5). Less than 1% of males have duplicate right testicular vein anatomy.[1]

Ninety-three per cent of varicocoeles occur on the left, the majority of which have a non-pathological aetiology.[2] Differences in testicular vein length,

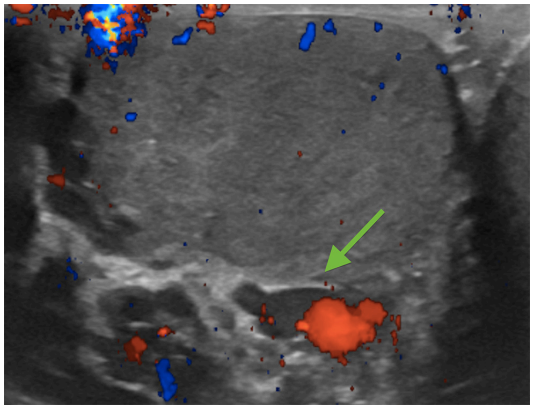

Figure 1 Doppler ultrasound of the right testicle; the green arrow points to a dilated vein in the pampiniform plexus. There is sustained flow reversal in this vessel during Valsalva.

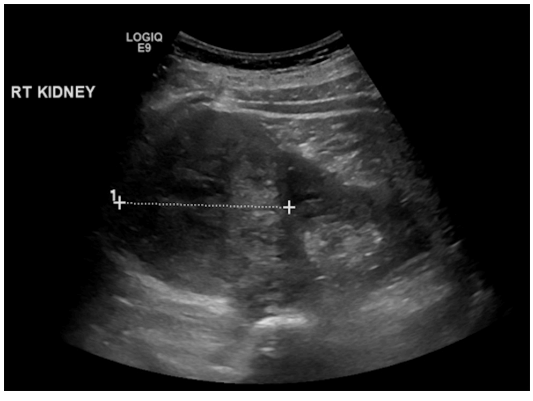

Figure 2 Ultrasound of the right kidney; there is a large mass lesion arising from the right kidney.

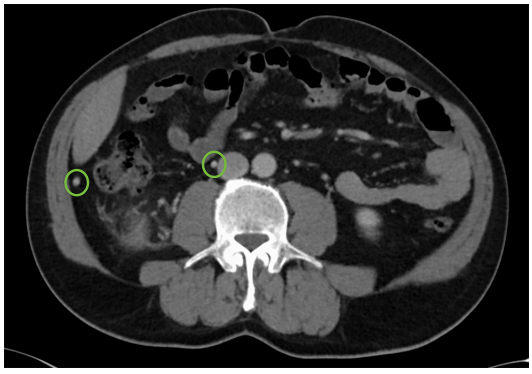

Figure 3 Contrast-enhanced CT of the abdomen portal venous phase. The right testicular vein is circled medially, the accessory right testicular vein laterally.

Figure 4 Three-dimensional reconstruction of the accessory right renal vein.

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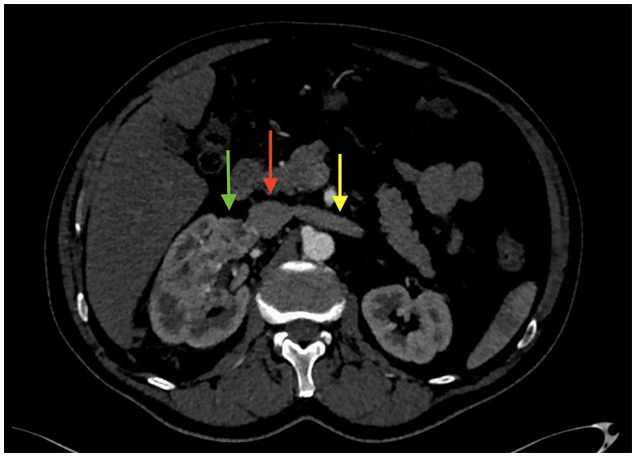

Figure 5 Contrast-enhanced CT of the abdomen arterial phase. The green arrow points to an enhancing renal tumour extending to involve the right renal vein. The red arrow points to the inferior vena cava, which is not involved. The yellow arrow points to the normal left renal vein.

drainage and angle of insertion contribute to the left-sided predominance.[3] The prevalence of varicocoele increases with age at a rate of approximately 10% per decade of life. Up to 53% of males in their 60s will have a varicocoele.[4] Pathological causes of varicocoele include extrinsic compression by a retroperitoneal mass and venous thrombosis.[2] Varicocoeles may present with pain, scrotal swelling and can be diagnosed on clinical examination.[1] Subclinical varicocoeles require imaging for diagnosis.[5] Doppler ultrasound is the imaging modality of choice. Factors such as vessel diameter and flow reversal on Valsalva can be used to diagnose and grade varicocoeles.[5]

Learning points

- Varicocoele prevalence increases with age at a rate of approximately 10% per decade,[4] and 93% occur on the left.[2]
- Right-sided varicocoele in an adult should always prompt further imaging to rule out pathological causes.
- Doppler ultrasound is the imaging modality of choice in the diagnosis and grading of subclinical varicocoeles as it has high diagnostic accuracy and is non-invasive.[5]

Contributors JWR is the first author. GS acquired images. SG provided reconstructed three-dimensional images. CC is the senior author.

Competing interests None declared.

Patient consent Detail has been removed from this case description/these case descriptions to ensure anonymity. The editors and reviewers have seen the detailed information available and are satisfied that the information backs up the case the authors are making.

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