The Interesting Case

Perirenal capsula adiposa—is it a sign indicating diabetes mellitus?

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A 48-year-old male patient presented with a 20-year history of recurrent nephrolithiasis and medullary sponge kidneys. Consultation was sought to exclude hyperparathyroidism and renal tubular acidosis. He had a history of more than 30 episodes of passage of stones and pyelolithotomy had been performed twice. He presented with an intravenous urogram that showed segmental discrete small areas of calcification with enlarged medullary rays, findings which supported the diagnosis of medullary sponge kidneys (Figure 1).

Abdominal sonography revealed hepatomegaly with diffusely increased echodensity and all the other typical signs pointing to steatosis hepatis.

On sonography the kidneys were symmetrical and normal in size and outline. Parenchymal width as well as parenchymal echogenicity were normal. Numerous partly confluent echodense complexes were visible in the medullary region, most of which showed associated dorsal echoacoustic shadowing (Figure 2). These appearances were compatible with the diagnosis of medullary sponge kidneys.

The investigator was struck by the presence of a symmetrical hypoechoic seam of up to 12 mm width, surrounding the kidneys. This finding corresponds to a thickened capsula adiposa, i.e. perirenal fat (Figure 3a, b). The distinction from other perirenal pathologies, e.g. haematoma or space-occupying lesion, could easily be shown by computed tomography (Figure 4).

Under normal circumstances the capsula adiposa is poorly visible on ultrasonography. Its size depends on the nutritional state of the patient. In slender patients it cannot be seen at all, in adipose patients it can reach up to 20 mm in diameter. It is then visible as a hypoechoic seam surrounding the kidney. It is separated from the renal cortex by the echodense line of the capsula fibrosa and from the pararenal fat by another echodense line outlining Gerota's fascia. The capsula adiposa moves with respiration together with the kidney.

The above patient was of normal weight (70 kg for 169-cm body height), and hence other explanations for the presence of an enlarged capsula adiposa were sought. We observed this finding on ultrasonography of 25 other patients in our unit. In these patients the diagnosis of diabetes had not been known, but was subsequently confirmed by OGTT. In the present case glycosuria was found and HbA1c was 9.1%. The patient also had elevated γGT, GPT and triglycerides in line with the above sonographic findings in the liver.

Fig. 1. Intravenous urogram with segmental discrete small areas of calcification and enlarged medullary rays. These findings support the diagnosis of medullary sponge kidneys.

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Fig. 4. Computed tomography of the kidneys documenting the diagnosis of thickened perirenal fat (i.e. capsula adiposa).

We wish to draw attention to this ultrasonographic sign. At present the association with diabetes mellitus is only suggestive. Confirmation by an appropriately blinded prospective trial would be rewarding.

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