

Use of diffusion-weighted magnetic resonance imaging in the management of infected renal cyst in polycystic kidney disease

Sir,

Renal cyst infection is a potentially serious complication of polycystic kidney disease (PKD). To aid the early diagnosis and management of such infection various imaging modalities such as computed tomography (CT), ultrasonography, positron emission tomography (PET) have been used to locate the infected cyst of the multiple cysts, especially when initial antibiotic therapy has failed.^[1] We used diffusion-weighted magnetic resonance imaging (DW-MRI), T1- and T2-weighted imaging (T1/T2-WI) sequences to localize the exact infected cyst.

A 66-year-old woman with PKD presented with high fever and left flank pain. Serum creatinine was 4.1 mg/dl. C-reactive protein and leukocyte counts were elevated. Blood and urine cultures were negative. An abdominal ultrasound scan revealed multiple anechoic cysts and a few cysts with echogenic contents within in the left kidney suggesting hemorrhage and/or infection. Extrapolating the data available about the use of DW-MRI in brain abscess^[2] we tried localizing the exact infected cyst in our patient by using DW-MRI, T1-WI and T2-WI sequences. DW-MRI with b-factor = 1000 s/mm² was used for evaluation. The MRI appearance of cysts on DW-MRI, T1-WI, and T2-WI [Figure 1] were examined.

The left mid-pole cyst in our patient showed low signal on both T1-WI and T2-WI with wall thickening, it showed exclusively high-signal intensity on DW-MRI, and was suspected as to be the infected cyst. Purulent material up to 5 ml was aspirated on CT guided drainage of the mid pole anterior cyst. Culture grew *Escherichia coli*. The patient's symptoms and fever resolved after the administration of appropriate antibiotics.

Diffusion-weighted-MRI provides a non-invasive imaging technique to assess the random diffusion of water molecules.^[3] This takes only a few minutes in addition to a routine MRI protocol and no use of harmful radiation involved or contrast agents, when compared to PET scan, which involves the use of radiopharmaceuticals. Compared to PET, MRI is cheaper and easily available. In DW-MRI highly viscous fluids characteristically appear as high-signal intensity, which in appropriate clinical scenario can imply the presence of pus and thus help to locate the infected cyst. From these observations, we suggest that when there are hyperdense cysts in CT the possibilities are presence of blood or pus in the cysts, in this situation from the above findings MRI can help us to differentiate between blood and pus. To conclude, DW-MRI can be used as an effective tool in cases of suspected infected cyst.

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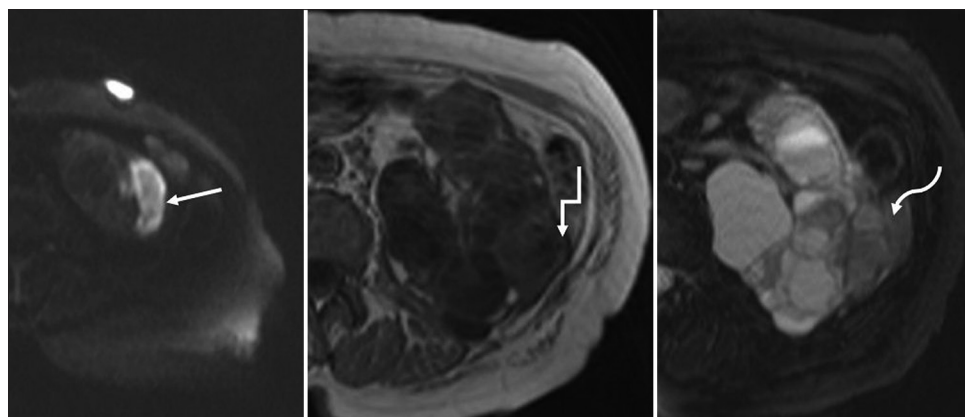


Figure 1: DW-MRI showing left renal cyst with remarkably high signal intensity, indicating that the contents of cyst show restricted diffusion (straight arrow). T1-WI showing the low-signal in corresponding cyst (step arrow) and Fat-saturated T2WI showing the low-signal cyst (curved arrow)

References

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