

Case Study

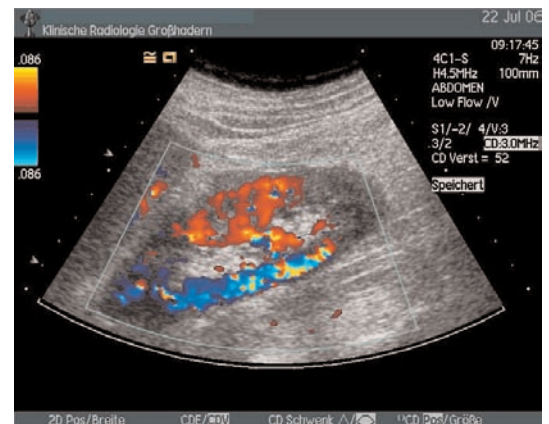
Using Contrast-Enhanced Ultrasound to Demonstrate Renal Infarction



Patient History

A 70-year-old female patient with a history of arterial hypertension and atrial fibrillation had complained of right-flank pain for two days. Laboratory tests showed no signs of inflammation, and an initial B-mode and color Doppler ultrasound examination did not demonstrate renal cysts, solid or complex masses. Infarction could not be excluded by the ultrasound, even with the use of color Doppler. The color Doppler imaging did demonstrate peri-renal fluid collection, but no hydronephrosis or ureter dilation. A perfusion defect near lower pole of the kidney was suggested, but such findings may also be artifactual. To confirm, a low-MI, contrast-enhanced ultrasound was ordered, using an intravenous injection of 2.4 cc of SonoVue® followed by 10-cc saline flush.

Image Findings



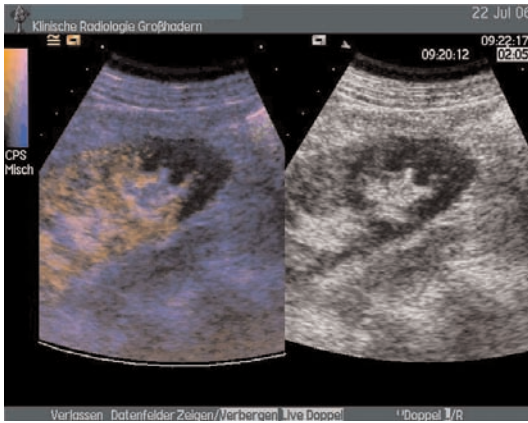
B-mode ultrasound demonstrates a subtle right peri-renal fluid collection. No hydronephrosis or ureteric dilation seen. Color Doppler imaging suggested a perfusion defect near lower pole of the right kidney, which could not be confirmed without contrast enhancement.

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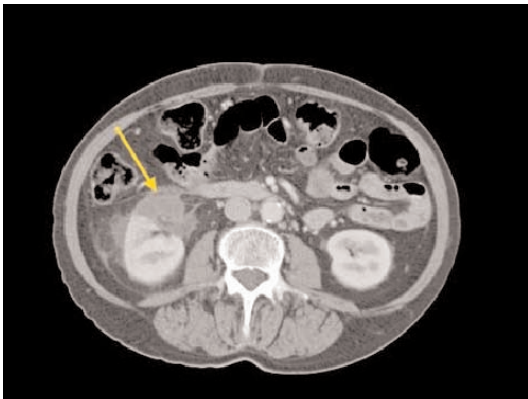
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Ultrasound images of contrast agent perfusion were obtained from the arterial to the late venous phase. Using both Mix Mode and Live Dual imaging, a perfusion defect was clearly visualized at the lower pole of right kidney.



The perfusion defect in the lower portion of the right kidney was confirmed by a coronal MPR CT study using a 64-MDCT (Siemens SOMATOM® Sensation 64).

Clinical Outcome

With a known history of arterial hypertension and atrial fibrillation, abnormal heart-chamber movement puts the patient at high risk for developing thrombi. Most renal infarcts are a result of movement of a thrombus from the heart chamber to the renal artery. To protect the patient against further renal damage, Marcumar® [3-(1'-phenyl-propyl)-4-hydroxy-coumarin] was prescribed. This anti-coagulant makes the blood more liquid, helping to halt thrombus development in the heart.

Ultrasound Solution

Contrast-enhanced ultrasound allows for a rapid, reliable, noninvasive evaluation, providing dynamic, real-time information on lesion vascularity. No ionizing radiation is involved, and the contrast agents are non-toxic. The use of Cadence™ contrast pulse sequencing technology (CPS)* allowed a real-time evaluation of renal perfusion with a high level of sensitivity and spatial resolution, as well as excellent separation of tissue signal and contrast agent. This technology is designed to improve sensitivity and specificity of contrast agents by combining the non-linear fundamental and higher-order harmonic contrast signals.

Cadence contrast pulse sequencing technology is a trademark of Siemens AG. SonoVue is a registered trademark of Bracco Diagnostics, Inc.

** At the time of publication, the US Food and Drug Administration cleared ultrasound contrast agents only for use in LVD. Check the current regulation for the country in which you are using the system for contrast agent clearance.*

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