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Preliminary Investigation

Ultrasound Contrast for Hepatic Tumors Using IDE Particles

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Parker KJ, Baggs RB, Lerner RM, Tuthill TA, Violante MR. Ultrasound contrast for hepatic tumors using IDE particles. Invest Radiol 1990;25:1135–1139.

Our group has developed a dense particulate formulation that is radiopaque and therefore is useful as an x-ray contrast agent,[6] while also increasing ultrasound backscatter of

Size Distribution

hours after intravenous injection of IDE of the suspending

IDE Particle S

Histology sections were obtained from normal and VX2 implanted livers, with and without IDE treatment. Routine 5-μm hematoxylin and eosin (H&E) stained sections were

Per

3

mm to 3 cm, plus frequent masses in the abdominal cavity.

of livers before and after IDE administra-

Suspected tumor locations were identified at the time of scanning with reference to anatomic landmarks such as the free liver edge, the diaphragm, and gall bladder, and

locations were verified after euthanasia by visual

Pulse-echo backscatter of eight normal livers (without VX2 tumor implants) were perfo

speckle does not show -day-old VX2 tumor implant

visible as a hypoechoic region (be

out noticeable speckle change. An example of an in vivo rabbit liver scan, in sagittal orientation, is shown in Figure 2A. The liver has a 7-day VX2 implant located in the medial right lobe; however, pre-contrast examination fails

days postimplantation in a sagittal view (Fig. 5A) before

Fig. 4. B-scan images of a rabbit liver in vivo 26 days after

30 minutes after IDE injection shows an additional hypoecho

of the limited number and these

attempt is made to derive true positive

Fig. 3. Excised liver showing 20-day-old

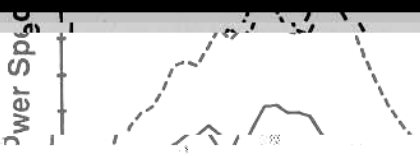

Fig. 6. Five-pulse backscatter measurements usi

IDE. The polarized field shows IDE particles, or groups of

MHz bandwidth. In terms of the corresponding time domain

echoes, the average root mean square (rms) (amplitude

2 MHz. We postulate that this discrepancy in- erties of IDE in liver.

over 2 to 12

particles) as bright spots. The lobular pattern of central vein

(center) surrounded by portal triads (peripherally) also can

be seen. The IDE clusters tend to be in the periphery of the

References

1. Lerner RM, Gramiak R, Violante M, Parker KJ. Ultrasound contrast agents. In: Skukas J, ed. Radiographic contrast agents. Rockville, MD: Aspen Publishing; 1989:263–272.