ARTICLES

Sonoelasticity imaging: results in in vitro tissue specimens

F Lee Jr, JP Bronson, RM Lerner, KJ Parker, SR Huang and DJ Roach
Department of Diagnostic Radiology, University of Rochester Medical Center, NY 14642.

The authors present a method for imaging tissue stiffness (sonoelasticity) that has been developed and tested in a laboratory setting by using in vitro canine and human prostate glands. A low-frequency acoustic source was used to induce vibration in tissue under examination, and a color Doppler ultrasound (US) instrument was modified to detect vibration amplitude. The resulting image is a color "map" of tissue vibration superimposed on conventional gray-scale US images. Stiffer tissues vibrated less in response to audible sound, regardless of echogenicity. Normal human and canine prostate glands demonstrated a uniform vibration pattern. Four of four human prostatic adenocarcinomas and two stiff inclusions injected into canine prostate glands demonstrated a lack of vibration in comparison with normal surrounding tissue. The authors conclude that while further study is necessary, sonoelasticity imaging may enhance the detection of neoplasms by enabling their identification solely on the basis of stiffness.