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HITACHI – HI VISION™ SYSTEMS

Breakthrough Ultrasound Imaging

Ultrasound is a useful diagnostic tool to visualize subtle changes in the prostate, but image quality has not always been the best. With the availability of the **HI VISION™ Ultrasound Platform** from **Hitachi Medical Systems America** (Twinsburg, OH) all that has changed. Images obtained with their HI VISION are dramatically sharper and clearer than many prostate imaging systems.

This is significant for patient care. If elevated PSA levels are due to cancer, it is important to make the diagnosis as quickly as possible. Using conventional methods, taking samples for a biopsy can be a hit-or-miss affair. But with the HI VISION and its superior imaging capability, the diagnostician has better information on which to base an analysis. Improved diagnostics can therefore minimize the number of biopsies which a patient may be forced to endure and result in greater comfort and greater satisfaction with their treatment.

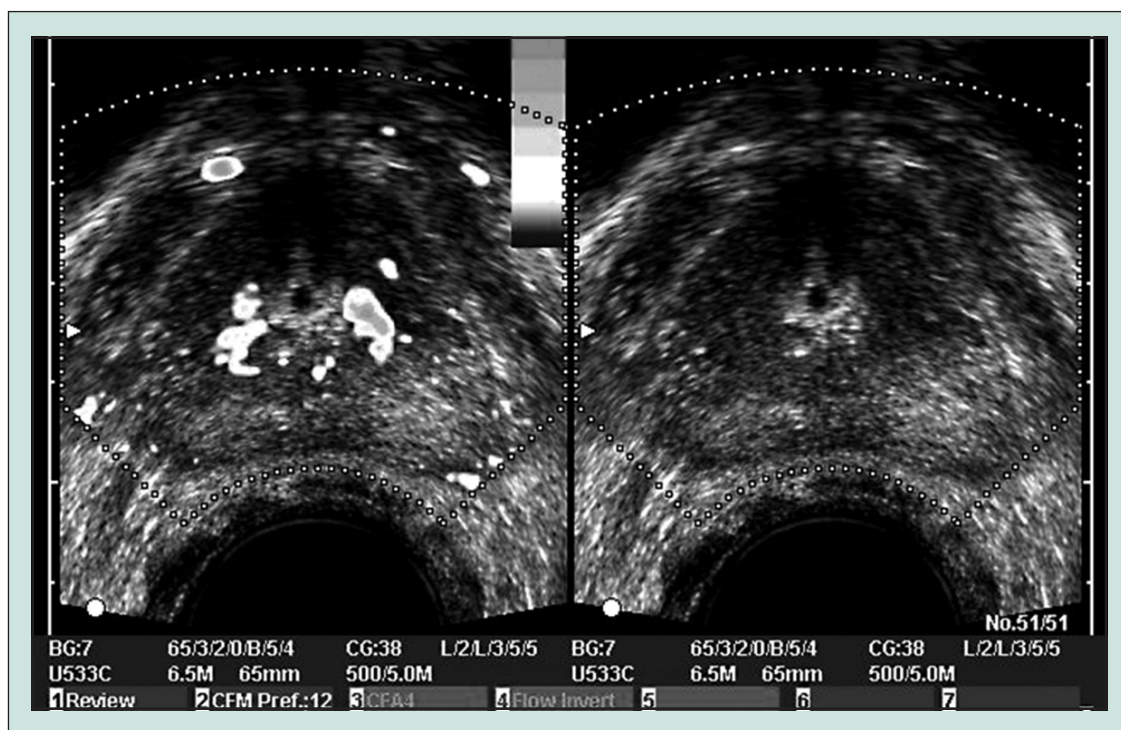
Naturally, there is a cost associated with such high-end technology. What can help to justify this? Firstly, a reduction in the number of scenarios where procedures are performed and consumable items are used up without having necessarily helped the patient. Secondly,

HI VISION is not limited to prostate imaging. The technology has multiple uses and its advanced imaging techniques make it applicable to all urologic studies such as bladder, kidneys and penile Doppler. Because of its wide variety of available urology-specific probes including simultaneous biplane and 200° field-of-view biplane, HI VISION may greatly improve the quality of therapeutic procedures, such as radioactive seed implants, and radio frequency and thermal ablation procedures.

Practical Use

How does the Hitachi technology stand up to use in the real world? Douglas Chinn, MD is a partner with his brother in Chinn & Chinn Urology Associates, Inc. (Arcadia, CA) and has several years' experience using and evaluating ultrasound imaging devices. He thought that the gold standard technology was just that, until he saw the HI VISION ultrasound and the images it provided. "The quality is amazingly good," he says, "and the instrument is very user-friendly to operate."

Color Flow Angiography (CFA) was used to detect hyper vascular activity within the prostate.



"The HI VISION™ SYSTEM has allowed us to detect small lesions in the prostate more easily and more accurately. That means we are diagnosing a larger number of cancers and faster than before, so we can determine the appropriate treatment in a more timely manner."

Douglas Chinn, MD, Chinn & Chinn Urology Associates, Arcadia, CA



The images obtained with Hitachi Medical System's HI VISION are dramatically sharper and clearer than many prostate imaging systems.

Previously his practice relied on biopsies and other diagnostics being carried out at local hospitals. But the HI VISION was affordable enough and so easy to use that they were able to bring the device into their own practice. His brother, Mahlon Chinn, MD was skeptical at first, but was soon won over. He used to rely on the work of radiologists to help him make diagnoses. But once he saw how easy the HI VISION was to use and the clarity of the images it generated, he decided to get fully trained to use it himself. Douglas Chinn comments, "The HI VISION has allowed us to detect small lesions in the prostate more easily and more accurately. That means we are diagnosing a larger number of cancers and faster than before, so we can determine the appropriate treatment in a more timely manner." In conclusion, he states that the HI VISION met his own very high expectations and those of his brother, too.

Application in Development - Elastography

Elastography (or elasticity imaging) is a novel application. The information depicted in these images provide clinicians with another data point to help them assess the prostate.

Douglas Chinn has reviewed the potential for this approach for PCRI Insights following the EAU (European Association of Urology) conference in Milan, Italy in March, 2008¹. Referring to the Hitachi technology, he notes that the strain image is estimated by calculating the gradient of the displacements and is displayed as a color overlay on the B-Mode image. Stiffer structures are displayed as one color (blue) while more easily deformed and softer tissues are displayed in a different color (red).

Chinn also reviewed a study by Pallwein *et al.*² in which real-time elastography (RTE) was applied to 383 patients, but only five targeted core biopsies were taken. Then each of the patients had a repeat standard systematic 10-core biopsy by another urologist, performed blind without knowledge of the RTE-targeted biopsy results. RTE-targeted five-core biopsies detected 91.0% of the cancers, while standard systematic 10-core biopsies detected 76.9%.

In concluding his review, Chinn states that RTE looks very promising as a non-invasive method to increase the accuracy of diagnosis. There may be issues to be resolved – the technology is highly operator dependent, transition zone cancer has not been studied, and benign prostatic hypertrophy and

prostatitis can cause false positive readings. However, he feels that the technology has tremendous potential and hopes to be at the forefront of applying the procedure.

Conclusion

What was once thought to be state-of-the-art ultrasound technology has been dramatically upgraded with the availability of the Hitachi HI VISION. The images it generates are reported to be of a much greater quality; and users say it is very easy to operate, making diagnoses quicker and more accurate. This represents a significant contribution towards improved patient treatment. Making a correct diagnosis the first time means greater patient satisfaction if they do not have to return for repeat procedures. It also allows the physician to see more patients. Everyone benefits.

To learn more

For more information about **HI VISION SYSTEMS**, please call 1-800-800-3106, or visit the company's Web site at www.hitachimed.com.

References

1. Chinn, D. *PCRI Insights* 23rd Annual EAU Conference 2008 www.PCRI.org.
2. Pallwein, P.L. *et al.* 23rd Annual EAU Conference 2008.

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