

Dr. Duke Bahn On Color Doppler Ultrasound

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Many of you have heard Dr. Myers speak about Dr. Duke Bahn and the Color Doppler Ultrasound both on this blog and in the Prostate Forum newsletter. We recently had a chance to talk to him about Color Doppler Ultrasound, why it is different from other prostate cancer scans, and why it should be the first stop on a man's prostate cancer journey. If you'd like to contact Dr. Bahn, you can do so [here](#).

Dr. Bahn: The most common way of detecting prostate cancer is by having an ultrasound and an ultrasound-guided biopsy. A man is a candidate for an ultrasound evaluation: 1) when his PSA is high; 2) his PSA shows an elevating trend, even if its not that high; and 3) he has had a positive digital rectal examination (DRE). If he has had a positive DRE, regardless of his PSA, he is a candidate for ultrasound evaluation.

The problem we're facing right now is that there's an arbitrary cut-off for the PSA at 4. Anybody who has a PSA over 4 gets a biopsy indiscriminately, perhaps causing clinically insignificant cancer to be detected. It results in over-detection and eventually over-treatment of prostate cancer.

The role of the Color Doppler Ultrasound is in examining the prostate by blood flow pattern (color) in addition to black and white images. In a Color-Doppler study, we pick up about 15-20% more cancers. The Color Doppler Ultrasound also helps us identify the exact tumor size. The tumor size seen on Color Doppler is usually larger than it is in black and white. So the black and white image underestimates the cancer size. In addition, if we see a suspected lesion in black and white and that suspicious lesion shows increased blood flow, it is most likely cancer. The more flow in the lesion, the higher the Gleason grade in general. Then we perform a targeted biopsy rather than a blind systemic random biopsy. A targeted biopsy has a higher yield with fewer tissue cores taken. By getting tissue from the middle of the action, we can get a more accurate Gleason grading. Also, based on the cancer location we can anticipate where the cancer would have spread out, if at all. We can take a tissue sample from the most probable area of cancer escape, like the neurovascular bundle, or nearby seminal vesicle. By doing so, we can determine the exact stage of the cancer. Knowing the correct Gleason grade and the exact stage of the cancer are important prior to making a final treatment decision.

Since Color Doppler Ultrasound can identify the cancer clearly by the location, size, and blood flow pattern, it can be objectively monitored over the years, especially if someone is undergoing active surveillance.

Is Color Doppler Ultrasound an important tool for active surveillance patients?

Color Doppler Ultrasound is very important not only in assessing the entire prostate cancer situation, but also in monitoring someone undergoing active surveillance.

Without Color Doppler Ultrasound, you're primarily depending on the PSA, which is not perfect. PSA levels can go up and down and are influenced by many other factors. And the digital rectal examinations are so subjective. These are not really scientific ways of following the cancer. If we have a clearly identified index tumor on base line imaging studies, then we can objectively monitor the lesion over the years.

How often do you feel Color Doppler Ultrasound should be done for those in an active surveillance program?

For patients undergoing active surveillance management, I recommend a PSA test once every three months for two years. If there are two or three consecutive PSA risings, the patient should get a Color Doppler Ultrasound. Otherwise, an annual Color Doppler ultrasound would be acceptable. If all the findings remain stable for two years, then the patient can have a PSA test done once every 6 months and a Color Doppler Ultrasound every two years. We just finished collecting data on 520 men undergoing active surveillance up to 10 years. During that ten years' time, we found that about 30% of men needed some treatment because ultrasound clearly showed disease progression. Increased blood flow in the known cancerous lesion was the first sign of the cancer progression. So 30% of men in this cohort ended up having proper loco-regional treatment. We did not have any patients who developed metastases or who died. No one got into trouble. The point here is that 70% of men are doing just fine up to ten years. This result is similar to other published data. Certainly, proper patient selection was the key to this favorable outcome.

You're based in Ventura, CA, but you have patients come to see you from all over the world. Do men need to be referred by an oncologist or urologist or can they seek you out independently?

I see a variety of patients. The first group of patients includes men who have had a high PSA or a positive DRE and are told they need to see an urologist for an ultrasound and biopsy. Rather than going to the urologist as recommended by their physician, they come to me as a self-referral. They often hear about me from neighbors, friends, and co-workers.

Another group of patients includes men referred from doctors—either primary care physicians, urologists, or medical oncologists like Dr. Myers or Dr. Scholz. Patients referred from the medical oncologist are usually the easiest to handle. Medical oncologists have already educated the patient. They know what to expect and they know why they are here to see me.

But there is also a group of men who worry about their prostate health due to certain high risk factors they may have. After assiduous online search, they come to me to get a good baseline Color Doppler Ultrasound for future reference.