

PROSTATE CANCER IN FOCUS

Current Developments in the Management of Prostate Cancer

Section Editor: Daniel J. George, MD

The Use of Multiparametric MRI in Diagnosis and Active Surveillance of Prostate Cancer



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H&O When is multiparametric magnetic resonance imaging used in the diagnosis of prostate cancer?

TP We have the option of using multiparametric magnetic resonance imaging (mpMRI) to evaluate patients with an abnormal digital rectal examination (DRE) or elevated prostate-specific antigen (PSA) level. The standard of care is to first repeat the PSA; if the results are abnormal, a biopsy should be performed. But there are cases in which we use mpMRI prior to a biopsy. This has a couple of potential benefits. If the prostate appears normal on mpMRI and the patient is at low or average risk for prostate cancer, he may decide to skip the biopsy. If the prostate appears abnormal on mpMRI, we have visual guidance regarding the location of the lesion or lesions to sample—this is called image-guided targeted biopsy.

H&O How often do you use mpMRI for targeted biopsy?

TP We are seeing more and more men with an elevated PSA level who want a targeted biopsy instead of a standard ultrasound-guided biopsy. The problem is that insurance rarely covers the cost of mpMRI prior to biopsy. We can petition insurers to see if they will cover the cost, but most insurers do not cover it unless the patient has already had a negative biopsy. The patient can also pay out of pocket for the test, although most patients do not wish to do this. But in the rare cases when we do an mpMRI prior to biopsy and we see a lesion, it does allow us to target the lesion when we conduct the biopsy.

Numerous studies have looked at the use of targeted

biopsy vs standard biopsy. The bottom line is that targeted biopsy tends to pick up more high-grade, clinically significant tumors than standard biopsy does. Standard biopsy is more likely to pick up low-grade tumors—the ones that patients are probably better off not knowing about. A study by Siddiqui and colleagues that appeared in the *Journal of the American Medical Association* in 2015 looked at nearly 1000 men undergoing biopsy for suspected prostate cancer. It concluded that targeted biopsy was associated with increased detection of high-risk prostate cancer and decreased detection of low-risk prostate cancer compared with standard biopsy. Multiple studies have reproduced these results.

H&O How often are you using targeted biopsy in your practice?

TP If the patient has an mpMRI and we see a target, we always try to do a targeted biopsy. I would say I am doing about 10 of these a month, as are my partners. Of course, the main bottleneck is getting that mpMRI in the first place.

H&O What do you do when no lesion is seen on mpMRI?

TP If the mpMRI is negative, the standard of care is still to perform a biopsy when the patient has a confirmed elevated PSA or abnormal DRE. We know that mpMRI does not pick up all cancers. But if the patient is at average risk for cancer (eg, with no family history) and the mpMRI is negative, he may decide to decline a prostate biopsy. We are seeing this occur more often.

H&O Are there other uses for mpMRI in patients with suspected prostate cancer?

TP We often see cases in which the PSA level is elevated, the biopsy finds nothing, and the PSA level continues to be elevated, which necessitates another biopsy. At some point you are just chasing your tail, and mpMRI offers a way to try to break that cycle. A European study by Panebianco and colleagues that appeared in *European Urology* in 2018 found that mpMRI can take the place of repeat biopsies in patients who continue to have elevated PSA levels after a negative biopsy. This approach to mpMRI has the potential to save money and lower morbidity.

We would like to conduct a similar cost analysis here at Duke, but we have not yet found an economist to work on this project. After what number of repeat negative biopsies is it more cost-effective to simply conduct mpMRI? I saw one patient who was referred to me after 17 rounds of prostate biopsies. That was an extreme case, but we often see patients who have had 3 or more negative biopsies despite persistently elevated PSA levels. In those cases, Medicare is likely to approve mpMRI—especially if the man has a family history of prostate cancer. Private insurers tend to be less likely to approve mpMRI, even in some of these situations.

H&O What are some of the potential advantages of mpMRI over other options for diagnosis?

TP Multiparametric MRI does not carry a risk of infection like a prostate biopsy does. It is also able to visualize the whole prostate, so it allows us to make additional unsuspected diagnoses at the same time. Most often this will be benign prostatic hyperplasia, but we occasionally have other incidental findings, such as evidence of prostatitis, a bladder stone, a bladder diverticulum, a hernia, or another lesion. If cancer is subsequently detected, mpMRI is a great staging tool, and will provide information as to whether the cancer has permeated through the capsule, invaded the seminal vesicles or metastasized to the lymph nodes, or limited views of the bones.

H&O What are some of the disadvantages of mpMRI?

TP The big problem, of course, is the expense. Multiparametric MRI can cost hundreds or even thousands of dollars in the United States, which makes the cost difficult to justify in many cases. Because mpMRI is less expensive in Europe, costing around 300 Euros in several countries, it is easier to justify the cost there.

Another big disadvantage is the need to go into a noisy, enclosed tunnel for the test. This is unpleasant for most people, and a real problem for people with

claustrophobia. Open mpMRI is a good option for viewing the extremities, but is not an option for imaging the prostate.

H&O Can you discuss the use of mpMRI in active surveillance?

TP Multiparametric MRI is a great way to conduct active surveillance in men with low-risk, low-grade cancer. If we see a small lesion, we can follow it over time. We can also do a targeted biopsy of the lesion. If we do not see a lesion, one is unlikely to appear over a short period. I would love to use mpMRI all the time for this scenario, but I also understand the need to be prudent in how we use healthcare resources. We do not want to overuse mpMRI, so it is only one component of an active surveillance approach that incorporates PSA testing, DRE, periodic biopsies, and biomarker tests such as Prolaris, Decipher score, and Oncotype DX.

H&O How do you see the use of MRI in prostate cancer evolving over the next few years?

TP We expect to see an updated version of the Prostate Imaging Reporting and Data System (PI-RADS) for scoring lesions. This system improved between the PI-RADS 1 and PI-RADS 2 versions, but there are still some nuances that need to be addressed.

Another change we may see is away from expensive, multiparametric MRI to biparametric MRI, which works nearly as well but is faster and less expensive. An additional way to save money is to omit dynamic contrast enhancement. These changes are likely to make the technology more affordable and therefore more widely used.

Regarding patients with a diagnosis of prostate cancer, I think we will see an increase in image-guided therapy that employs MRI, which is termed *focal therapy*. In focal therapy, the cancer is targeted and ablated while the uninvolved prostate is spared. If we can superimpose the MRI on the ultrasound image, we should be able to better guide treatment. And of course, we will continue to use MRI to detect recurrence in patients who have been treated for prostate cancer.

Disclosure

Dr Polascik has a teaching agreement with HealthTronics.

Suggested Readings

Panebianco V, Barchetti G, Simone G, et al. Negative multiparametric magnetic resonance imaging for prostate cancer: what's next? *Eur Urol*. 2018;74(1):48-54.

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