EDITORIAL

Is it time for a magnetic resonance imaging-targeted only prostate biopsy strategy?

In this issue of Diagnostic & Interventional Imaging, Garcia et al. report the results of a series of 60 patients prospectively enrolled in a study which compared the value of systematic biopsies with that of targeted biopsies, both performed transperineally, for the detection of prostate cancer [1]. The authors found that systematic biopsies and targeted biopsies performed equally in the diagnostic, not only of any cancer, which is an established finding, but also in the diagnosis of significant cancer defined by the presence of any Gleason grade 4 and/or a maximum cancer core length > 3mm on biopsies, which is less universally reported [2]. This interesting finding might be related to the precision of the transperineal approach used for biopsy. However, the potential superiority of transperineal biopsies, as said by the authors, has only been reported for sampling low anterior apical lesions. Most of the tumor foci in this series are posteriorly located. There may be thus another reason and I am wondering if it is not related to the fact that the radiologist who performed the biopsies is probably an expert in transrectal ultrasound (TRUS). This might have influenced the direction of the needle path during systematic biopsies, even if the magnetic resonance imaging (MRI) findings were not known at the time of systematic biopsies. It has indeed been established that PIRADS 4–5 posterior peripheral zone (PZ) lesions were visible on TRUS in up to 80% of cases [2]. Some of the presumed systematic biopsies may have actually been more or less directed towards the hypoechoic aeras, becoming thus ipso facto targeted biopsies.

Beyond this slightly controversial issue, the article by Garcia et al. nicely illustrates two paradigm shifts [1]. The first is the indication of a pre-biopsy MRI, not only in the setting of a repeat biopsy, as more and more often recommended (reference 10 in Garcia et al. article), but also in naïve patients to increase the detection of potentially aggressive tumors. In this setting, the authors show that 2 or 3 cores vs. 12 cores perform equally, while providing more information on the cancer core length and the percentage of biopsies positive for significant cancer. Targeting is a matter of experience and the authors nicely show that a well-trained operator, using high quality TRUS equipment, can detect the vast majority of significant tumors with a visual overlay of MR images. Computed TRUS-MRI image registration or direct MRI guidance have their best indication when the lesion visible on MRI remains undetectable on TRUS images.
The second paradigm shift is that this article suggests that a targeted biopsy only strategy may be the future of prostate biopsy. Most of the tumors missed by targeted biopsies were not visible on MRI, located in the transition zone (TZ) and thus fortuitously diagnosed by two systematic biopsies. These two anterior biopsies are not recommended in naive patients and may be discarded during the first set of biopsies and only targeted biopsies of a visible lesion on MRI may be the standard of care in the TZ. The article thus shows that only one PZ tumor, visible on MRI, was missed by targeted biopsies and diagnosed by systematic biopsies. Although it has been reported that systematic biopsies could detect up to 16% of non-visible tumors on MRI with a grade 4 component [3], we have shown that the percentage of grade 4 component of these lesions was not greater than 25% [4]. These tumors may be eligible for active surveillance [5], meaning that they may not need an immediate diagnosis. This strategy would allow for a new definition of active surveillance consisting of a repeat PSA assay and repeat MRI, followed by biopsy only if signs of progression appear (raising PSA or detection of a suspicious focus on MRI). This active surveillance strategy would avoid the initial biopsy with 10–12 systematic biopsies and the follow-up of a microscopic cancer non-visible on MRI.

To conclude, this well-written article nicely illustrates that the probabilistic approach of systematic biopsies, unique in oncology and applied these 20 past years to the prostate, may be replaced by the more logical principle of oncology applied for all the organs of the body: finding the target first and using imaging to guide the biopsy [6,7].

Disclosure of interest

The author declares that he has no competing interest.

References


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