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Platinum Priority – Editorial

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Let's Keep It at One Step at a Time: Why Biparametric Magnetic Resonance Imaging Is Not the Priority Today

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This year the European Association of Urology (EAU) prostate cancer guidelines panel has added the recommendation to perform multiparametric magnetic resonance imaging (MRI) before the initial biopsy to the 2019 guidelines [1]. This recommendation is based on several studies published recently that provide level 1 evidence favoring the use of multiparametric MRI before biopsy [2–4]. From a clinical point of view this new recommendation will improve the diagnostic and therapeutic management of prostate cancer patients and clearly represents an advantage. From an economic and health care system point of view, this new recommendation represents a major challenge to tackle in the years to come. As prostate cancer is a very frequent disease and as, at least in Western countries, the majority of men undergo opportunistic screening or early detection, a substantial number of MRIs will need to be performed. At current reimbursement rates, this high number of additional MRIs represents a substantial stress for health budgets and for infrastructure because of insufficient scanning time and an insufficient number of MRI scanners available. These challenges need to be addressed rapidly. In this issue of *European Urology*, van der Leest et al. [5] present results for a reduced prostate MRI protocol that allows a decrease in the number of sequences per prostate MRI and thus in scanning time while still retaining high diagnostic performance. This reduced protocol seems to be an essential step towards implementation of the new EAU prostate cancer guideline recommendations without putting health care systems at risk of major stress. Having recognized and explored this important issue is laudable and the authors need to be congratulated for their work and their efforts. However, there are some points that need to be taken into account.

In this study all MRI scans were read by only two dedicated experts with years of expertise and experience in the field. Moreover, the scans were carried out under strictly applied quality criteria in a limited number of selected centers. The current study does not show what kind of results might be achieved in a general radiology unit, but rather what potential lies in prostate MRI when performed under the best possible conditions and read by the best possible experts. A distinct sign of this obvious expertise is the fact the neither the sensitivity nor the specificity changed on omission of the contrast-enhanced sequences. In general, adding information to a diagnostic evaluation can be used in two ways. First, the additional information can be used to identify more lesions previously not detected with the two other sequences, and thus increase the sensitivity (more true positives and less false negatives). However, this is at the cost of lower specificity, as the false positive rate increases. Second, the additional information can be used to confirm the suspicion of a lesion found on the other two sequences and thus reduce the number of false positives and improve the specificity. Neither of the above effects is observed in the results of this study as the sensitivity and specificity remain the same, at 95% and 69%, respectively, for both full multiparametric MRI and biparametric MRI (without contrast enhancement). Moreover, the use of contrast-enhanced sequences is supposed to be applied as a “problem solver” in Prostate Imaging-Reporting and Data System (PI-RADS) v2 with the aim of reducing the number of nonconclusive PI-RADS 3 scores. However, omission of contrast-enhanced sequences results in a marginal, clinically meaningless increase in PI-RADS 3 lesions from 6.4% with full multiparametric MRI to 7.8%

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with biparametric MRI. Both observations clearly show that these data were generated by dedicated experts not needing, after years of experience, any additional information beyond basic biparametric MRI with axial sections. It needs to be stressed that these results are unlikely to be reproduced outside centers of dedicated expertise and excellence.

Another issue is the problem of an MRI protocol dedicated to prostate cancer detection only and not necessarily also to staging. One of the main advantages of MRI before the initial biopsy is the possibility of a “one-stop shop” approach that provides the clinician with high-quality images for diagnosis, disease localization, and local and regional staging for treatment decision-making all at the same time. The reduced protocol might be sufficient for diagnosis but is likely to be insufficient for later use once the disease is diagnosed, that is, for reliable estimation of the extent of intraprostatic, extraprostatic, and regional disease. According to the current study data, at least 30% of patients ended up having high-grade cancer diagnosed; when applying the EAU guideline recommendations, these men would have to undergo staging MRI before making any decisions on treatment. The need for repeat MRI in these patients, possibly after a biopsy, negates the time and cost savings observed in this study. Moreover, as the “staging” MRI is possibly carried out after biopsy, the image quality and staging reliability might be lower [6]. It is clear that evaluation of the clinical utility of a reduced MRI protocol is much more complex and cost analyses need to consider many more facets than those suggested in this article.

Finally, before prostate MRI sequences can be reduced to allow higher throughput and cost-effective use of MRI, it seems more important to provide prostate scans of reliable and reproducible quality for a general population [7]. The diagnostic performance of normal full multiparametric MRI in the general community setting is still insufficient, as evidenced in many publications [8,9]. To really improve patient management by applying the new recommendations, it is not the priority to shorten sequences but to assure that prostate MRI, no matter where it is performed, delivers reliable clinical performance. This can only be achieved if all prostate MRI scanners are quality controlled and radiologists are thoroughly trained and systematically evaluated; in other

words, with certification. To achieve these goals should be the priority now. The current data provide a glimpse of the future and show what might be possible in a few years when such certification systems are implemented, but until these are available and established, such reduced protocols should not be applied in routine and remain reserved for experienced expert centers only.

Conflicts of interest: The author has nothing to disclose.

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