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Editorial

Prostate Cancer Screening

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Prostate cancer (PCa) is a worldwide health issue, affecting one man out of seven with increasing dominance with aging [1]. Screening programs based on (PSA) test reduced the mortality rate and prevented metastatic disease. However, PCa-related mortality is rising in many countries, maybe due to a lack of awareness and changes in screening guidelines. PSA test-based screening programs have also induced unnecessary biopsies and increased the "overdiagnosis" of clinically insignificant PCa, specifically those cancers that are not connected to any symptoms or death. Overtreatment leads to long-term treatment-related bad effects. MRI proved its great role, compared to PSA, in the detection of clinically significant PCa. New European Association of Urology (EAU) recommendations for PCa screening have been recently proposed defining low-risk patients who do not need MRI and intermediate or high-risk patients, who should undergo MRI. Prostate MRI without contrast showed promising results compared to the use of PSA analysis alone as a screening tool in men aged 49 to 69 years. This new approach to PCa screening could facilitate early diagnosis while reducing the number of unnecessary biopsies. [1]. The most applicable use of MRI in screening involves combining it into a multistep pathway to ensure that screening is cost-effective and improves outcomes. [2] Screening recommendations by the Council of the European Union that a stepwise approach to prostate cancer screening is needed. This is likely to stimulate research on prostate cancer screening using both PSA and MRI.

Screening in different communities is needed [3] even if there is low acceptance. There is a need to scale up screening services for prostate cancer in all communities to enable early diagnosis and treatment and to reduce morbidity and mortality. Although systematic reviews and individual studies support the MRI approach, the impact of using it in men with suspected prostate cancer is not yet documented [4]. The EAU position and recommendations in 2021 indicated that the organization's thoughts will improve the early detection and differentiation of significant prostate cancer, reduce prostate cancer-related morbidity, improve Quality of Life (QoL), and ultimately save many lives. [5]. The EAU's approach could optimize QoL for many men since those diagnosed with insignificant cancer can safely avoid any further treatment or undergo active surveillance. This will reduce the number of men diagnosed with advanced prostate cancer who would be subjected to a range of drugs, including chemotherapy, androgen deprivation therapy, DNA damage repair targeting therapy, and bone-targeted agents, all of which are associated with significant toxicity (i.e., significant impairment in QoL). Reducing the number of men diagnosed with advanced disease could also reduce prostate cancer–specific mortality rates and the economic burden of prostate cancer management.

Further study showed that CNNs (convolutional neural networks) achieved high accuracy in classifying prostate MRI image quality on an individual-slice basis and almost perfect accuracy when classifying the entire sequences. Evidence Level: 4 Technical Efficacy: Stage 1, this study developed, trained, and validated a fully auto-mated classifier based on convolutional neural networks that are capable of accurately identifying low-quality prostate MRI images. [6] Another study showed no statistically significant difference was detected in terms of overall PCa detection rate comparing MRI In-bore and MRI-TRUS fusion-targeted prostate biopsy when performed by the same radiologists' team as MRI images reader and biopsy operator. However, MRI In-bore showed a higher percentage of malignant cells per core compared to MR-TRUS, data that might impact clinical risk stratification and patient management, especially for those eligible for active surveillance protocols [7].

Messina et al could confirm that the upgrade of lesions with DWI Score 3 to PI-RADS 4 given a positive Dynamic contrast-enhanced (DCE) MRI does not provide a positive impact on the overall diagnostic performance of MRI for the detection of clinically significant prostate cancer, leading to a reduced cancer prevalence yield. Moreover, their results might boost the applicability of non-contrast MRI for selected populations. and centers. Finally, a new subcategorization of PI-RADS 3 scoring could be proposed, consisting of PI-RADS 3 and 3up findings, and divided into: PI-RADS 3B requiring to be directed to biopsy according to clinical data, and PI-RADS 3FU, to be followed-up with MRI [8].

According to Cancer Statistics, 2023, although the cancer mortality rate has decreased continuously since 1991, yet there are rising incidences of breast, prostate, and uterine corpus cancers, all of which have a wide racial disparity in mortality and are amenable to early detection. [9] The extended 22-year follow-up report of the Goteborg screening study provides further evidence of the efficacy of serial PSA testing. With longer follow-up, the rate of overdiagnosis decreases but the NND (number needed to diagnose) still indicates that overdiagnosis is not negligible. Increasing adherence to the program, starting before age 60 and not stopping at age 70 for all men may further improve the efficacy of PC screening. Still, it should be balanced against the risk of overdiagnosis. [10]. An evaluation based on a microsimulation model found that, given a screening context, the incorporation of MRI with subsequent combined targeted and standard biopsies in quadrennial screening for men aged 55 to 69 years had a high probability of being more cost-effective relative to the traditional PSA screening pathway. Magnetic resonance imaging was more effective and cost-effective [11].

Conclusion

PSA testing followed by MRI with subsequent combined targeted and standard biopsies had a high probability of being more cost-effective compared with the traditional screening pathway using PSA and standard biopsy.

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