Open Horizon

Superfast Magnetic Resonance Imaging-based Diagnostic Pathway for Prostate Cancer

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Abstract

We describe a <36-h superfast diagnostic pathway for men at risk of prostate cancer (PCa) that was initiated in our centre in March 2022. Patients are scheduled to undergo a repeat prostate-specific antigen blood test, magnetic resonance imaging, a urology consultation, and, if indicated, prostate biopsies in a single morning. The histopathology report is available the next day, after which the biopsy results and treatment options are discussed via a telephone consultation. The project has included 122 patients so far. With a reduction to only one hospital visit per patient and just five appointments (4%) cancelled so far, this timely pathway seems to be efficient from a patient perspective. In addition, reducing the waiting time until histopathology diagnosis could decrease the anxiety and depression that patients may experience during the diagnostic workup for PCa. Therefore, we believe that this fast-track diagnostic pathway could be incorporated in the future European standard of care, bringing PCa care in line with other malignancies such as breast cancer.

Patient summary: We describe a superfast diagnostic pathway for men at risk of prostate cancer. So far, this strategy seems to be an efficient and appropriate way to shorten time to diagnosis and to reduce the number of hospital visits for patients.

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With up to 470 000 new cases a year, prostate cancer (PCa) is the most frequently diagnosed cancer among men in Europe [1]. The time from referral to histopathology diagnosis of PCa can take up to several months in the current diagnostic pathway, which is significantly longer than for other highly prevalent malignancies [2,3]. The introduction of prebiopsy magnetic resonance imaging (MRI) in particular has added to the time to diagnosis and has increased the frequency of hospital visits per patient. Patients may experience an increase in psychological stress during the diagnostic cancer workup [3]. Anxiety and depression levels seem to increase during diagnostic evaluation, reaching a peak when patients are awaiting biopsy results [4].

A fast-track diagnostic pathway could limit the time to histopathology diagnosis, reduce hospital visits, and decrease the psychological impact that patients may experience. Fast diagnostic pathways have been realized in breast cancer over the past decades and have led to improvements in the timeliness of health care and in patient satisfaction [5,6]. For PCa, Falagario et al [7] have described a 1-d diagnostic pathway.
However, only a temporary biopsy result was offered to patients on the same day as digital tissue examination, and the definitive biopsy result was provided 2 wk later. Although Falagario et al [7] described a valuable improvement in the diagnostic pathway towards more efficient and timely health care, we believe that the length of the definitive diagnostic workup for PCa should be further reduced.

Our hospital initiated a <36-h superfast diagnostic pathway service for cases with suspicion for PCa in March 2022. Adult men, referred by a general practitioner (GP), with prostate specific antigen (PSA) levels between 3 and 50 ng/ml and/or an abnormal digital rectal examination were eligible for inclusion. Exclusion criteria were the use of anticoagulants, previous suspicion of PCa, claustrophobia, and patient refusal to participate. The diagnostic assessment was conducted according to the European Association of Urology guideline recommendations, with MRI performed for risk stratification for biopsy indication [8]. Patients were informed via leaflets about all the steps of the new pathway before their hospital visit. A urine culture was performed beforehand for patients who had reported symptoms of a urinary tract infection. Cases with a positive urine culture were treated with oral culture-targeted antibiotics before their appointment.

Figure 1 presents an overview of the <36-h pathway. Men were scheduled to undergo a repeat PSA blood test in the early morning, after which biparametric MRI of the prostate was performed. Subsequently, uroradiologists directly assessed all MRI scans and provided a detailed report according to the European Society of Urogenital Radiology guidelines [8]. This was followed by a urology consultation of 20 min, consisting of a complete anamnesis and discussion of the MRI results. Patients with a Prostate Imaging-Reporting and Data System (PI-RADS) score of ≥4 immediately underwent transperineal cognitive-targeted prostate biopsies. All biopsies were performed by urologists, with the patient under local anaesthesia with lidocaine. In line with a recent randomised trial, patients did not receive antibiotic prophylaxis [9]. For PI-RADS 3 lesions, a decision on the biopsy indication was made at an individual level, with consideration of characteristics such as PSA density. Patients with a PI-RADS score of ≤2 were advised to follow up PSA blood tests and PSA density via their GP. Biopsy specimens were processed on the same afternoon and treated during the following 24 h. Uropathologists provided a report on the next day, in accordance with the prevailing International Society of Urology Pathology (ISUP) guidelines [8]. The biopsy results were then discussed with the patients on that same afternoon via telephone consultation. PSA follow-up and/or repeat MRI were recommended for men with negative biopsies; further dissemination imaging and treatment options were discussed with patients who had positive biopsies.

The project started in March 2022 with nine patients per week (3 d with three patients per day). However, an efficient workflow and positive patient experience resulted in extension to 15 patients per week from April 2022 onwards. A total of 122 patients have been included in this project so far. Only five appointments (4%) have been cancelled at the last minute because of illness or no-show. Of the 48 patients
who underwent biopsy, 73% were diagnosed with PCa, which was clinically significant PCa (International Society of Urological Pathology grade group ≥ 2) in 86% of cases.

A challenge of this pathway is that it should be assumed that all three patients may potentially have an indication for prostate biopsies in one morning when scheduling appointments. If one or more of these patients does not have a biopsy indication, these appointments remain open, leading to inefficient scheduling. However, after observing that it was uncommon for all three patients to need biopsies, the urology consultation was shortened to 20 min instead of the 30 min initially assigned.

To the best of our knowledge, we are the first centre to describe and implement a superfast <36-h definitive diagnostic pathway for PCa. To date, this appears to be an efficient and timely approach that could eventually be incorporated into the European standard of care. The pathway fulfills the need for rapid diagnostic clarity for patients with suspected PCa.

A future objective is to reduce the waiting time between GP referral and the urology consultation, as this would diminish stress and depression levels in men with suspected PCa [10]. Another objective is to shorten the time from histopathology diagnosis to imaging for staging, such as prostate-specific membrane antigen positron emission tomography/computed tomography. Lastly, the psychological impact and patient satisfaction will be investigated using patient-reported questionnaires.

Conflicts of interest: The authors have nothing to disclose.

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