Editorial

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In Search of a New Prostate-Specific Antigen

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The prostate is, in principle, not a functional voiding organ. The prostate is principally a reproductive exocrine gland. Despite this, the principle pathophysiologic concerns surrounding the prostate revolve around its role in obstructing voiding and its propensity to develop a malignancy with an alarming rate in developed countries. Hence, it is important for the investigator in these latter fields to recall that questions concerning the prostate are seldom exclusive to one discipline of thought, and while tumor biomarkers may factor little into voiding pathophysiology, it should not be ignored.

In a similar respect, the prostate-specific antigen (PSA) is often misunderstood as a conventional biomarker of prostate cancer, despite it neither being a product of an oncogene or a tumor suppressor gene. The PSA is an enzyme used to dissolve semen coagulum, and is neither specific for prostate cancer, nor sensitive [1]. Despite this, PSA is the most widely used prostate cancer marker due to its availability and simplicity. Conventional measures to improve sensitivity and specificity involve factoring free PSA, PSA density, and age-related cutoffs. The most popular methods to narrow down the suspects involve frequency-based predictions with regression analyses, resulting in regression-based nomograms [2]. Other approaches utilize variant splices such as proPSA, and iPSA. However, modern Bayesian analyses simply applied present conflicting viewpoints to our conventional understanding of cutoffs, allowing a good argument that it is past time to stick to such non tumor based decisions in considering a biopsy [3,4].

The current issue features the review of the most popular trends [5]. Recent decades have seen a step forward to focus on more cancer specific directions. While PCA3 and TMPRSS2: ERG have been around for some time, difficulty of method and cost have been the principle deterrents in its wide use. While novel markers are important, they have not been widely accepted since their introduction, and while not as unrelated to cancer as PSA is, they are not universally representative of prostate cancer, either, evident by their unimpressive accuracy.

Hence, more fundamental directions involve more novel methods apart from conventional discovery of antigens. These methods involve detections of microRNA and studies in proteomics. While these methods are not as concrete and satisfactory as what the generation familiar to PSA has grown accustomed to, they are more grounded in oncological principals, perhaps even allowing further avenues towards not only detection and follow-up but also as potential roles in intervention.

However, it is too early to state whether these detection methods have any grounds of clinical utility. MicroRNA based diagnosis are in its infancy in terms of application [6,7]. It would take years to provide reliable detection methods, another set of years to develop ease of use kits that could benefit populations in lieu of outdated PSA based technology.

Proteomics based methods are barely off the ground in terms of lab work. However, they have the potential to provide a more familiar method of cancer screening [8]. Gleaning an appropriate antigen, or a set of antigen patterns, from proteomic results may

lead to an easily adoptable serum or urine-based marker that can readily replace PSA. The pitfall is to actually await a reliable enough marker that is not only accurate, but is also fundamentally cancer associate so as to avoid the weakness of what PSA represents.

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