

DIAGNOSING PROSTATE CANCER

Diagnosing Prostate Cancer

The process of diagnosing prostate cancer often starts with a PSA test and a Digital Rectal Examination. The PSA Test is discussed below, but it must be emphasized that the PSA test, while a marker test, is not a prostate cancer test.

What is Prostate Specific Antigen?

PSA does its work in the semen. When semen is ejaculated it is a clot of thick liquid. Imagine how difficult it is for an individual sperm to escape this thick ejaculate in order to swim to the egg to fertilise it.

The Prostate Specific Antigen is one of the compounds produced by the prostate. It is a special kind of protein which interacts with other chemicals. This enables PSA to break other proteins into smaller pieces. This process transforms the seminal fluid into a lighter, more free-flowing liquid that allows individual sperm to swim free to perform their function.

PSA is produced in large amounts in the prostate and some of the excess PSA leaks into the bloodstream where it has no function. It is this PSA that can be measured in the laboratory with tests that are extremely sensitive so that they can measure very small amounts of PSA in the blood.

The level of PSA measured in the blood may be a useful indicator for a man and his doctor to discuss whether any action is required. If a biopsy of the prostate is thought necessary, this may confirm the presence or otherwise of prostate cancer tumours.

Elevated PSA is not a diagnosis of prostate cancer

It is important to repeat that an elevated PSA alone is not a diagnosis of prostate cancer. Even where men - say 60-70 years of age - have a PSA reading in excess of twice the normal PSA level for their years almost half do not have a positive cancer finding following multiparametric MRI and/or biopsy.

If there is higher than normal PSA in a blood sample then somewhere in the body there is prostate tissue producing PSA. If the prostate itself has been removed by a surgical procedure or has been destroyed by radiation, then the continuing presence of PSA means that there is prostate cancer tissue left behind or is growing in other parts of the body - this condition is known as a metastasis (pronounced meh-tast-a-sis).

mpMRI and Biopsy

A change is taking place in clinical practice. The European Urologists' organisation (EAU) has issued guidelines that men should not have a biopsy unless the patient has first had a positive multi-parametric MRI. Also the guidelines seek to replace the Trans-Rectal biopsy with a Trans=Perineal to avoid the risk of fecal infection. There are also special new laboratory tests and prostate cancer risk calculators all designed to reduce the risk of over-treatment of the patient. Some of these techniques, such as mpMRI, will show more precisely where in the prostate gland the tumour(s) might be found, so that, if a biopsy is necessary, it can be targeted to that site.

Transperineal Biopsy and Why the TRUS Biopsy is Now Defunct?

A well-known Irish urologist was heard saying to colleagues that he was not worried about his patients dying from prostate cancer but from infections caused by the fact that in a TRUS biopsy the probe and needle must go through faecal material before puncturing the bowel wall and into the prostate gland to take a sample. This has often caused infections so much so that prophylactic antibiotics are routinely issued to biopsy patients.

What is the alternative? In the words of Prof. Chris Bangma, a leading urologist in Rotterdam, who has not been doing what he called "faecal biopsies" for a long time. The alternative is a Transperineal biopsy. The perineum is the area between the anus and the rear of the base of the penis.

If the PSA test result looks suspicious, the man's doctor will send him for an mpMRI to which is very sensitive in showing positive tumours. In this event the patient should have a transperineal biopsy*. The ultrasound technology previously used had a risk of infection including sepsis. The is the same used to visualise an unborn baby, but in the case of a prostate biopsy it uses specific probes. The probe, which enables the urologist to visualise the prostate, is inserted into the rectum. The urologist sees an image of the prostate on a screen and this allows the doctor to measure the size of the prostate and to see if there are any unusual or irregular. These spots indicate parts of the prostate with a different density which may eventually prove to be cancerous.

The doctor will use in the biopsy a spring-loaded instrument to cut out small cores of prostate tissue which are sent to the laboratory. A biopsy is an invasive procedure which can be uncomfortable and there is a slight risk of infection. Other tests are under development and review which may reduce the number of biopsies by eliminating non-suspicious prostates, but before any active or radical treatment is recommended a confirmatory biopsy will be necessary.

MRI Scanning for Prostate Tumours

Apart from the problems with TRUS biopsies and for other, more technical reason, doctors have been trying to reduce the number of invasive biopsies, without compromising the patient's health, by using other techniques ahead of the performance of a biopsy.

The latest guidelines now require a positive using a multiparametric MRI (mpMRI) before

proceeding to a biopsy. This technique highlights the prostate tumours and the scan pinpoints their location in the prostate. This greatly reduces the number of biopsies, but it also changes the role of the biopsy to assessing the aggressiveness of the tumour.

There are also new laboratory tests and prostate cancer risk calculators all designed to reduce the risk of over-treatment of the patient and assist the treating physician in deciding whether to recommend proceeding to a biopsy.

Gleason Score: When in Doubt – Repeat

Prostate cancer is a disease with many aspects. Its aggressiveness can be estimated by a specialist following the microscopic examination of biopsy specimens. The standard classification for measuring the possible aggressiveness of a tumour is the Gleason Scoring system; in practice, it runs from totals of 6-10. A highly trained pathologist examines the tissue samples under a microscope. The tissue sample is examined to determine how frequent is the occurrence of cancer cells compared to healthy prostate cells and how differentiated (disordered) are the prostate cancer cells compared to normal healthy cells.

The overall Gleason scores are in the range of 6, 7, 8, 9 or 10. Scores of 6 and some 7s being considered Low Risk and 8-10 High Risk. The grading gives the treating team an understanding of how quickly the cancer might grow and, therefore, the treatment options.

Other factors in assessing the best treatment are extra-capsular spread, spread into the seminal vesicles, and how the prostate gland feels to the touch and the patient's PSA level. For prostate cancer, as for most solid tumours, the final diagnosis is made by the pathologist examining the prostate tissue under a microscope.

It is possible that, despite a suspicious PSA result, a series of biopsies may not show any sign of cancer then the urologist can propose to wait and repeat the tests some months later. This is a normal procedure; remember prostate cancer is not normally a fast growing tumour.

Decision Making

Prostate cancer has some "advantages" over other cancers. It is mostly slow growing so that a man and his family have plenty of time (say 3 months) to take into all personal facts including any other ailments, the predictive factors of the cancer and to discuss in-depth all available methods of cure or control – with their various side-effects – before making a decision. The specialist doctor should provide the man and his family with correct, reliable information on his individual choices starting with the mpMRI and indications for biopsy and on to treatment/non-treatment options where indicated.