2 Diagnosis and Classification of Prostate Cancer

The underlined terms are listed in the glossary.

In most cases prostate cancer is asymptomatic, which means that there are no clear symptoms to indicate it. Most prostate cancers are detected after a test to check the level of prostate-specific antigen (PSA) in the blood. If the level of PSA in the blood is high, the doctor will recommend more tests to see what causes the increase. A PSA test alone can never be used to diagnose prostate cancer.

The most common tools to check the condition of your prostate are a PSA test and a digital rectal examination (DRE). Your doctor could recommend these tests if you have urinary symptoms. These may include the need to urinate more often than usual, a sudden need to urinate that is difficult to postpone, or involuntary loss or dribbling of urine into the underwear. Often these symptoms point to other conditions, most commonly benign prostatic enlargement (BPE). They could also be signs of advanced prostate cancer. This is why you may need to take several tests before the doctor can make a diagnosis.

Based on the results of these tests your doctor may recommend a prostate biopsy. Keep in mind that a prostate biopsy is the only test that can confirm a prostate cancer diagnosis.

Because prostate cancer is generally asymptomatic, your doctor might recommend regular PSA testing. Whether or not your doctor will suggest this depends on many factors, including the policy of your doctor or hospital, or the national health policies of your country. The most important factors are always your age and your family history.

If you are diagnosed with prostate cancer, the urologist needs to define the tumour stage. By analysing tumour tissue, received either during surgery or biopsy, the pathologist determines the characteristics of the tumour and whether or not it is an aggressive form. Together, the stage and aggressiveness of the tumour form the classification.

Classification of the tumour in the prostate is used to estimate your individual prognosis. Based on this individual prognosis your doctor will discuss the best treatment pathway for you.

This section offers general information which is not specified to your individual needs. Keep in mind that situations can vary in different countries.

Symptoms at diagnosis

Prostate cancer is generally asymptomatic, which means that there are no clear symptoms to indicate it. In most cases, symptoms are caused by benign prostatic enlargement (BPE), or an infection. If prostate cancer does cause symptoms it is usually a sign that the disease has advanced. Because of this it is important that you see a doctor to understand what causes the symptoms.

The symptoms may include:

- Urinary symptoms such as urinary frequency or a weak stream of urine
- Blood in the urine
- Erection problems
- Urinary incontinence
- Loss of bowel control
- Pain in the hips, back, chest, or legs
- Weak legs

Bone pain could be a sign that the cancer has spread through the body. This is known as metastatic disease.

Diagnostic tools

One of the most frequently used tools to diagnose prostate conditions is a blood test to check the level of prostate-specific antigen (PSA). If the PSA level is too high, this suggests that the cells in the prostate are behaving unusually. This could be because of a tumour in the prostate, but also because of an infection or a benign enlargement of the prostate.

Your doctor will do a rectal examination with a finger to feel the size, shape, and consistency of the prostate **(Fig. 1)**. This test is known as digital rectal examination (DRE).

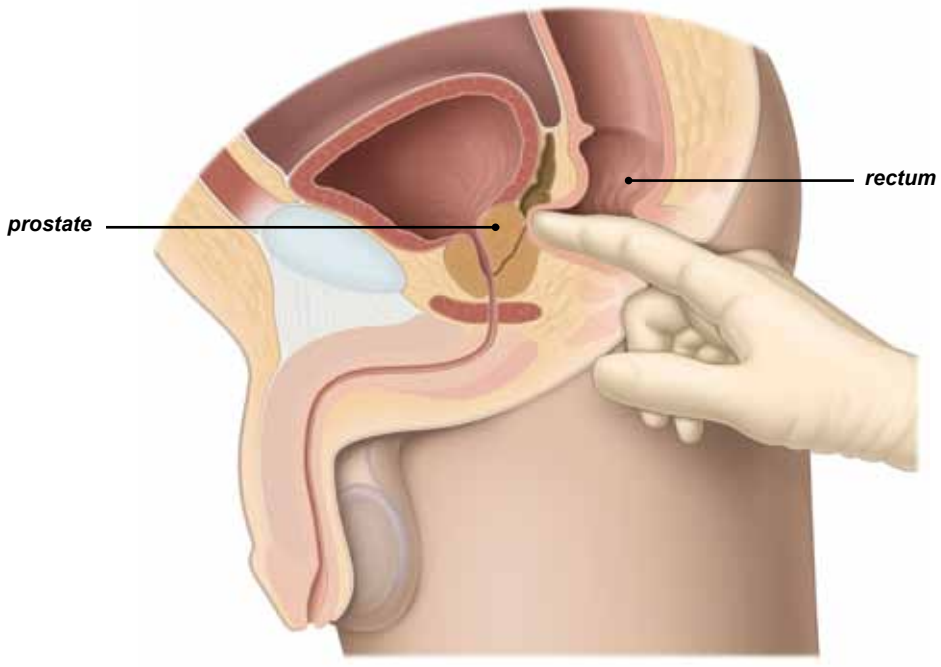

Fig. 1: Digital rectal examination to feel the size, shape, and consistency of the prostate.

Terms your doctor may use:

Benign tumour → a non-cancerous growth which will not spread to other organs

Malignant tumour → a cancerous growth which either grows continuously or in spurts. Malignant tumours can metastasize, which means they spread throughout the body

Metastatic disease → when a tumour has spread to other organs or distant lymph nodes

In some cases your doctor may recommend to make a scan of the lower urinary tract. Different types of scans are available, such as ultrasound, CT scan, MRI scan, and bone scan.

None of these tools will provide a definite answer on whether or not you have prostate cancer. Your doctor will use the test results, together with your age and your family history, to estimate the risk of you having prostate cancer.

If the risk is high, you may need a biopsy of prostate tissue. This test is done to confirm if you have a tumour or not. During a biopsy, between 8 and 12 samples of prostate tissue are taken. If you take medication to prevent blood clotting, discuss with your doctor if you need to stop taking it before the procedure. Before the biopsy your doctor will give you antibiotics and make sure your rectum and colon are cleaned to prevent infection.

You will receive local anaesthesia. Then the doctor inserts a needle through your rectum and into the prostate. The samples are taken from different parts of the prostate gland. If you have had a scan, the biopsy may be directed more to the area of the prostate that showed a possible tumour. The tissue samples are analysed by the pathologist in order to help determine future treatment.

After a prostate biopsy you may have some blood in your urine or semen. If you develop a fever, you need to contact your doctor immediately.

Although a biopsy is a reliable diagnostic tool, it may be possible that a tumour in the prostate is missed.

PSA Testing

Prostate cancer is generally asymptomatic but there are several known risk factors. These are increasing age, family history of prostate cancer, and your ethnicity. If you are at increased risk of having prostate cancer your doctor can recommend a test to measure the level of prostate-specific antigen (PSA) in your blood. This is known as PSA testing.

The main advantage of PSA testing is that men who are at higher risk of developing prostate cancer are tested regularly. This means that tumours may be found earlier, and there is a better chance of curing them.

The main setback of PSA testing is that tumours that would not have caused major health problems are also found. Treating these tumours can lead to unpleasant physical side effects. A cancer diagnosis may also lead to anxiety and stress. To prevent what is called over-treatment, some urologists oppose screening for prostate cancer with regular PSA testing.

Discuss with your doctor the pros and cons of PSA testing, and if it is right for you.

Classification and risk stratification

Prostate tumours are classified according to the tumour stage and the grade of aggressiveness of the tumour cells. These two elements are the basis for your possible treatment pathway.

The doctor does a series of tests to better understand your specific situation. Physical examination and imaging can be used to determine the stage of the disease. Prostate cancer is classified according to how advanced the tumour is, and whether or not the cancer has spread to the lymph nodes or other organs.

Prostate tumour stage is based on the TNM classification. The urologist looks at the size and invasiveness of the tumour (T) and determines how advanced it is, based on 4 stages. Your doctor will also assign an a, b, or c to the stage, depending on the size of the tumour.

Whether any lymph nodes around the prostate are affected (N) or if the cancer has spread to any other parts of your body (M) is also checked. If prostate tumours metastasize they generally spread to the bones, often the spine, or to the lungs, liver, or brain. Figures 2 to 6 illustrate the different stages.

The other element of classification is the Gleason score. The Gleason score is determined by the pathologist, based on the tissue taken during biopsy. It gives information about the aggressiveness of the tumour. Based on the pattern that the cancer cells show, the pathologist can see how fast the tumour grows.

The Gleason score

The Gleason score ranges from 6 to 10. Tumours with a higher score are more aggressive and more difficult to cure.

The score is based on the pattern of the cancer cells. Each pattern gets a value between 1 and 5. The pathologist adds the scores of the two patterns that appear in most of the tissue samples.

For example: the most common pattern has a score of 3, and the second most common a score of 4. In this case, the Gleason score is 3 + 4 = 7.

To form the risk stratification of your disease, the classification of the tumour is combined with your age, medical and family history, and general state of health.

Keep in mind that definitive classification of the tumour is only possible after you have had surgery to remove the entire prostate.

The multidisciplinary medical team

Urologist → a urologist specializes in health and diseases of the urinary tract, he or she is usually a surgeon

Medical oncologist → a medical oncologist specializes in all types of cancer and uses drugs to treat them

Onco-urologist → an onco-urologist specializes in urological cancers of, for instance, the bladder, kidney, prostate, or testicles

Radiation oncologist → a radiation oncologist uses radiation therapy to treat cancer

Pathologist → a pathologist studies tissue, blood, or urine to understand the specific characteristics of diseases. In cancer treatment, the pathologist helps with the classification of tumours

Radiologist → a radiologist specializes in imaging techniques and analyses ultrasound, CT, MRI, or other scans done to diagnose or monitor a tumour

Illustrations of the different stages of prostate cancer

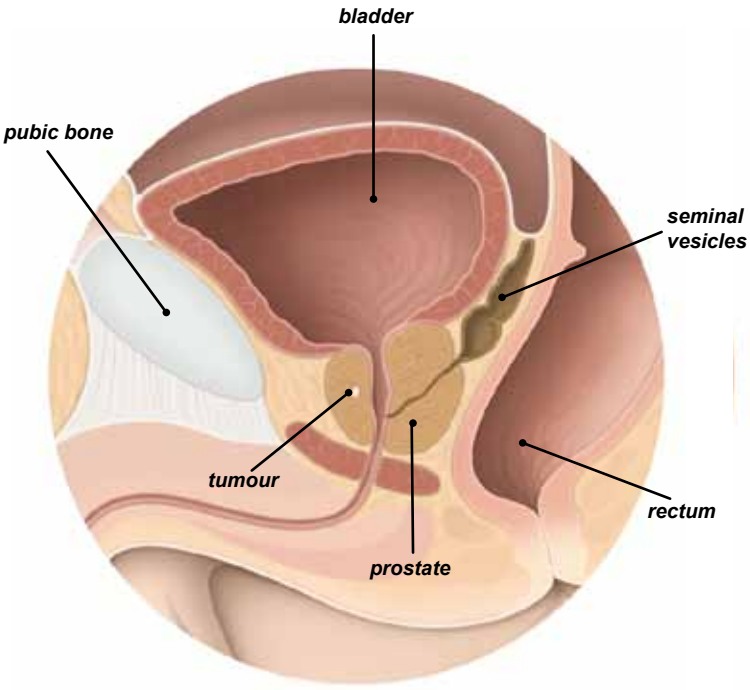

Fig. 2: A T1 prostate tumour is too small to be felt during a digital rectal examination or seen on a scan.

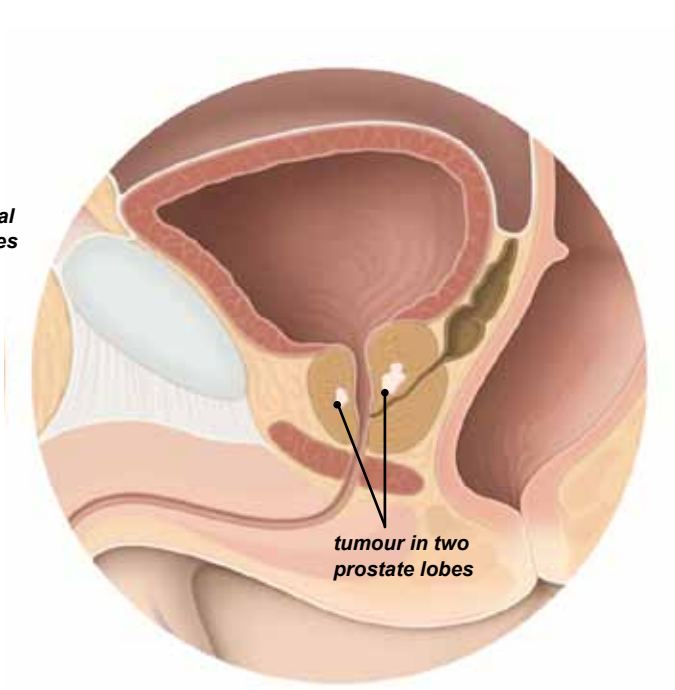

Fig. 3: A T2 prostate tumour is limited to the prostate.

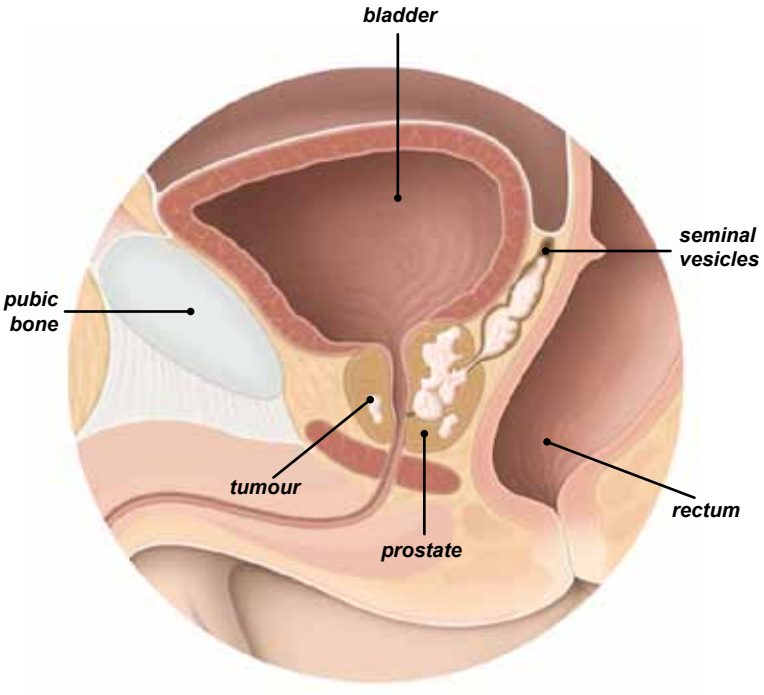

Fig. 4: A T3 prostate tumour which has spread to the seminal vesicles.

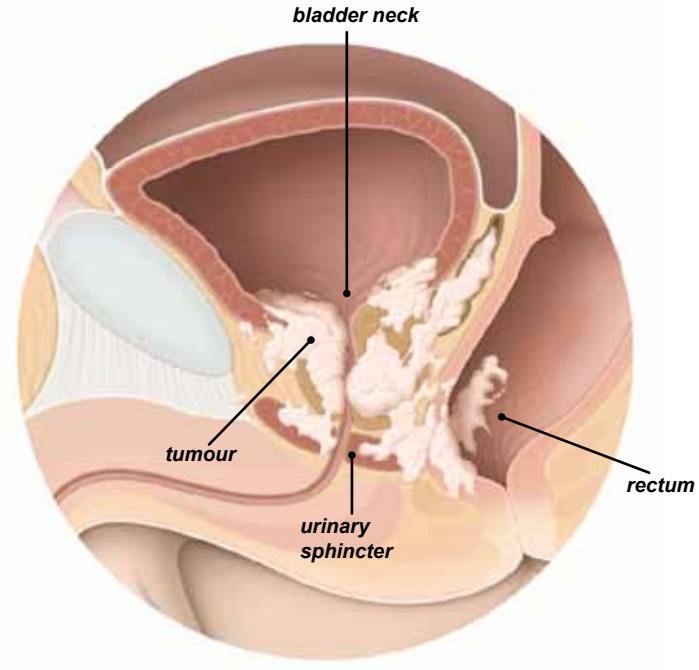

Fig. 5: A T4 prostate tumour which has spread to the bladder neck, urinary sphincter, and rectum.

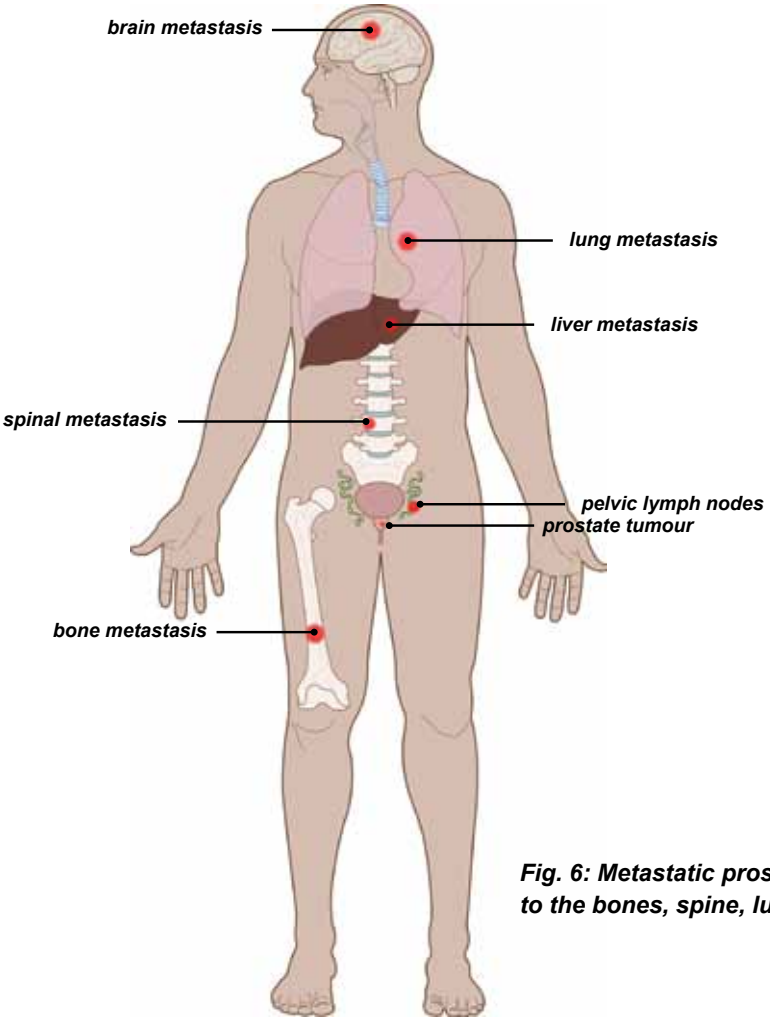

Fig. 6: Metastatic prostate cancer can spread to the bones, spine, lungs, liver, or brain.

This information was updated in January 2015.

This leaflet is part of EAU Patient Information on Prostate Cancer. It contains general information about this disease. If you have any specific questions about your individual medical situation you should consult your doctor or other professional healthcare provider. No leaflet can replace a personal conversation with your doctor.

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The content of this leaflet is in line with the EAU Guidelines.

You can find this and other information on urological diseases at our website: http://patients.uroweb.org

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