

Radiation Medicine

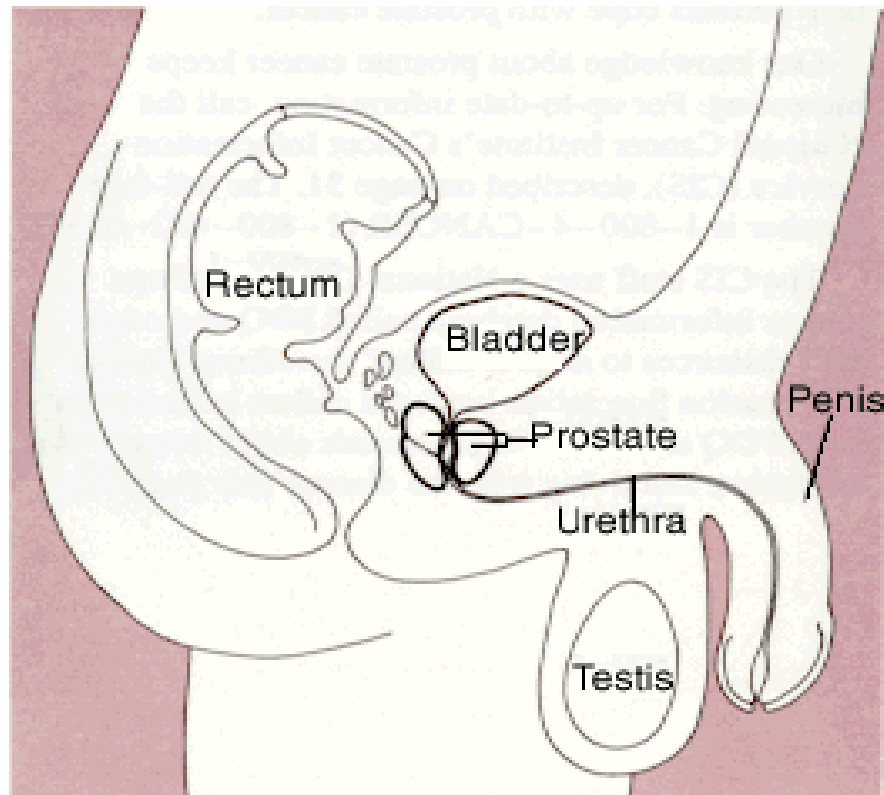
Prostate Cancer: Overview

Overview

The prostate is a gland in a man's reproductive system. It makes and stores seminal fluid, a milky fluid that nourishes sperm. This fluid is released to form part of semen.

The prostate is about the size of a walnut. It is located below the bladder and in front of the rectum. It surrounds the upper part of the urethra, the tube that empties urine from the bladder. If the prostate grows too large, the flow of urine can be slowed or stopped.

To work properly, the prostate needs male hormones (androgens). Male hormones are responsible for male sex characteristics. The main male hormone is testosterone, which is made mainly by the testicles. Some male hormones are produced in small amounts by the adrenal glands.



This picture shows the prostate and nearby organs.

Symptoms

Early prostate cancer often does not cause symptoms. But prostate cancer can cause any of these problems:

- A need to urinate frequently, especially at night;
- Difficulty starting urination or holding back urine;
- Inability to urinate
- Weak or interrupted flow of urine
- Painful or burning urination
- Difficulty in having an erection
- Painful ejaculation
- Blood in urine or semen
- Frequent pain or stiffness in the lower back, hips, or upper thighs

Any of these symptoms may be caused by cancer or by other, less serious health problems, such as BPH or an infection.

Diagnosis

The doctor may order exams and tests to learn more about the cause of the symptoms. These may include:

- **Physical exam** and medical history
- **Urine test** to check for blood or infection
- **Digital rectal exam (DRE)** - the doctor inserts a lubricated, gloved finger into the rectum and feels the prostate through the rectal wall to check for hard or lumpy areas
- **Blood test for prostate-specific antigen (PSA)** - a lab measures the levels of PSA in a blood sample. The level of PSA may rise in men who have prostate cancer, BPH, or infection in the prostate
- **Transrectal ultrasonography** - sound waves that cannot be heard by humans (ultrasound) are sent out by a probe inserted into the rectum. The waves bounce off the prostate, and a computer uses the echoes to create a picture (sonogram)
- **Intravenous pyelogram** - a series of x-rays of the organs of the urinary tract
- **Cystoscopy** - a procedure in which a doctor looks into the urethra and bladder through a thin, lighted tube
- **Biopsy** - If test results suggest that cancer may be present, the man will need to have a biopsy. During a biopsy, the doctor removes tissue samples from the prostate, usually with a needle. A pathologist looks at the tissue under a microscope to check for cancer cells. If cancer is present, the pathologist usually reports the grade of the tumor. The grade tells how much the tumor tissue differs from normal prostate tissue and suggests how fast the tumor is likely to grow. One way of grading prostate cancer, called the Gleason system, uses scores of 2 to 10. Another system uses G1 through G4. Tumors with higher scores or grades are more likely to grow and spread than tumors with lower scores

Staging

If cancer is found in the prostate, the doctor needs to know the stage, or extent, of the disease. Staging is a careful attempt to find out whether the cancer has spread and, if so, what parts of the body are affected. The doctor may use various blood and imaging tests (described above) to learn the stage of the disease. Treatment decisions depend on these findings.

The Stages of Prostate Cancer

The doctor may describe the stage using a Roman number (I-IV) or a capital letter (A-D). These are the main features of each stage:

- **Stage I or Stage A** - The cancer cannot be felt during a rectal exam. It may be found by accident when surgery is done for another reason, usually for BPH. There is no evidence that the cancer has spread outside the prostate.
- **Stage II or Stage B** - The tumor involves more tissue within the prostate, it can be felt during a rectal exam, or it is found with a biopsy that is done because of a high PSA level. There is no evidence that the cancer has spread outside the prostate.
- **Stage III or Stage C** - The cancer has spread outside the prostate to nearby tissues.
- **Stage IV or Stage D** - The cancer has spread to lymph nodes or to other parts of the body.