

**Steven L. Jensen, M.D.  
200 S. Wenona Suite 298  
Bay City, Michigan 48706  
989- 895-2634**

### **FACTS ON TESTICULAR CANCER**

Cancer of the testis is a relatively rare form of cancer, accounting for approximately one percent of cancers in American men. The great majority of these cancers, however, occur in males between the ages of 20 and 44, precisely the time when a man may be most concerned about sexual fertility and planning for a family. Most patients treated for early stage disease can retain sexual function and fertility.

An estimated 5,500 cases of testicular cancer and 400 deaths from this disease now occur each year. During the past 40 years, the rates among white men have nearly doubled and are now more than four times greater than among black men. The rates for Hispanics, American Indians, and Asians are higher than those for blacks, but still less than those for whites.

If detected early, before the cancer has spread to other parts of the body, testicular cancer can be completely cured nearly 100 percent of the time. Recent advances in managing the disease, particularly with the use of powerful anticancer drugs, have resulted in cure rates approaching 80 percent for even some advanced types of testicular cancer.

### **THE FUNCTION OF THE TESTES**

The testes are the male reproductive glands. They produce the spermatozoa or sperm cells needed to fertilize female egg cells. The epididymis, a comma-shaped structure resting on the top and back surfaces of each testis, stores the sperm cells until they are expelled or ejaculated from the body. The testes also produce the male hormone testosterone, which is responsible for deepening of the voice at puberty, a more muscular build, pubic and facial hair, and other male traits.

Each testis is approximately two inches long and one inch in diameter. They are suspended from the body by the spermatic cord and are enclosed in the scrotum, a pouch made of membrane and loose skin.

### **WHAT IS CANCER?**

Cancer is really a number of diseases caused by the abnormal growth of cells. Normally, the cells that make up the body divide and reproduce in an orderly manner, so that we can grow, replace worn-out tissue, and repair any injuries. Sometimes, however, cells get out of control. They divide too much and form masses known as tumors.

Some tumors may interfere with body functions and require surgical removal, but they do not spread to other parts of the body. These are known as benign tumors. Malignant--or cancerous tumors--not only invade or destroy normal tissue, but by a process known as metastasis, cells break away from the original tumor and migrate to other parts of the body. There they may form more malignant tumors.

Cancers can spread rapidly or take years. Cancer of the testes can spread rapidly and be deadly. With modern treatment, it is one of the most curable forms of cancer.

### **TYPES OF TESTICULAR CANCER**

Almost all testicular tumors occur in the cells that produce sperm and are known as germ cells. These tumors, which are usually malignant, are grouped into two main classes: seminomas and nonseminomas.

**SEMINOMA.** This is the most common type of testicular cancer, accounting for 30 to 40 percent of all such tumors. It occurs most often in men between the ages of 25 and 45 and is usually slow growing.

**SEMINOMA.** The nonseminomas tend to be more aggressive than seminomas. Although 75 percent of seminomas have not spread beyond the testes when first diagnosed, 60 to 70 percent of patients with nonseminomas are found at the time of diagnosis to have cancer that has already spread to the lymph

nodes. Nonseminomas can be further divided into four types, although they sometimes occur in combination and are then known as mixed tumors.

1. Embryonal cell carcinomas, 20 to 25 percent of all testicular tumors.
2. Teratomas, 5 to 10 percent.
3. Teratocarcinomas, 20 to 25 percent.
4. Choriocarcinomas, just 1 to 3 percent.

### **RISK FACTORS**

The major risk factor for testicular cancer is undescended testes -- that is, the testes, which are formed up in the body near the kidneys, fail to descend into the scrotum. This condition increases by five times the risk of developing testicular cancer. It can be easily corrected by surgery, however, and if done before a boy is six years old, the risk is reduced to normal.

Although physical injury to the testes has sometimes been associated with testicular cancer, it may be just be that the injury prompted the person to have his testes checked, leading to a diagnosis of an already existing tumor, rather than actually causing the cancer.

### **SIGNS AND SYMPTOMS**

The most common finding leading to a diagnosis of testicular cancer is a hard lump in the testicle. The lump might be as small as a pea or as large or larger than the testicle. Other signs include painless swelling and a feeling of heaviness in the groin area or scrotum. In most cases, there is no pain unless the patient also has an inflamed epididymis. These symptoms can also be caused by other conditions, but even the mildest symptom should be checked by a doctor.

### **EARLY DETECTION**

Men can help detect cancer of the testes in its earliest stages by practicing monthly a simple technique known as testicular self-examination (TSE). Ideally, this should be performed after a warm shower or bath, when the skin of the scrotum is relaxed, making it easier to feel anything unusual.

The man stands in front of a mirror and then gently rolls each testis between the thumb and fingers of both hands. (A booklet with more detailed instructions is available from the American Cancer Society.) If he finds lumps or other changes, he should contact his doctor immediately. The doctor will also feel the testes and surrounding structures as part of a complete physical exam and may order additional tests.

### **DIAGNOSIS**

New tests make it easier to distinguish between cancer of the testes and other conditions. Such techniques might include ultrasound, which is a painless and harmless test using frequency sound waves that bounce off body tissue to produce images of the internal structures. Any cancerous tumors found are projected on a small screen.

When a suspicious mass is present and other conditions are ruled out, the testis is removed through the groin. The procedure is known as orchiectomy. Tissue is then studied under a microscope. Because testicular tumors often are of a mixed type, many different sections of the removed testes will be examined to make a complete and accurate diagnosis.

Once a diagnosis has been made, other parts of the body where testicular cancer is likely to spread are also examined. Methods include:

\* Chest x-ray

\* Tomograms of the lungs. Tomograms are x-rays that show one thin layer of the lung at a time. They may reveal a small tumor not visible on a standard x-ray. These have been largely replaced by CAT scans of the lung.

\* CAT scans of the abdomen and lung. Computerized Axial Tomography Scans use x-ray beams that rotate around the body to produce a series of x-rays taken from different angles. This information is then processed by a computer to produce a complete picture of a cross-section of a selected body area.

\* Blood tests to determine the levels of serum markers, proteins that in abnormally high levels indicate the presence of certain cancers. Measuring serum levels not only helps in making an accurate diagnosis, but comparing readings taken at different times can show if a patient is responding to treatment, or if a relapse occurs.

### **CHEMOTHERAPY**

Combinations of several different anticancer drugs have greatly improved survival rates, achieving complete remission in 80 percent of patients with nonseminomas and limited metastasis. Newer drug combinations can help save additional patients who don't respond to initial drug therapy or who later have a relapse.

Side effects of chemotherapy depend on the drugs used and may include hair loss, nausea and vomiting, a feeling of tiredness, and changes in the patient's blood count. The hair grows back and in most other side effects end when chemotherapy is stopped.

### **RADIATION**

Radiation therapy is the treatment of choice for patients with seminomas and may be used at times for those with nonseminomas. The aim of radiation therapy is to destroy cancer cells by injuring their ability to divide. For patients with testicular cancer, radiation is usually beamed at the abdomen and pelvis, and sometimes the chest and neck. Chemotherapy or the surgical removal of nearby lymph nodes may also be part of the treatment.

Side effects of radiation therapy include a general feeling of tiredness that usually leaves within a week after treatment is completed, nausea and vomiting, and skin irritations.

### **PROGNOSIS**

Survival rates vary widely with the type of tumor, stage of disease, and treatment used. For patients with early stage seminomas, removal of the testes and radiation therapy should result in cure rates close to 100 percent. Patients with early stage nonseminomas have cure rates greater than 95 percent. For the most advanced cases, the cure rates are 40 percent for the nonseminomas.

### **HOPE FOR THE FUTURE**

The greatest hope for the future cure of testicular cancer lies with men themselves. Men can help detect cancer of the testes in its most curable stage by practicing monthly testicular self-examination. For patients with advanced disease, promise is offered by development of more effective anticancer drugs and their use in combination.

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