

A933: testis : seminoma

General facts of Testicular cancer

Testicular cancer is cancer in one or both testicles. It usually occurs in young men. This type of cancer can be treated and very often cured.

The testicles (or testes) are part of the male reproductive system. Each one is normally somewhat smaller than a golf ball. They are held in a sac of skin called the scrotum. The scrotum hangs beneath the base of the penis.

The testicles make male hormones, most of which are testosterone (tes-TOSS-ter-own). They also produce sperm. Sperm cells are carried from the testicles through small tubes (vas deferens) to the seminal vesicles, where fluid made by the prostate gland is added. The fluid travels through the tube (urethra) in the center of the penis. This tube carries both urine and semen, but at different times.

The testicles have many kinds of cells. The different cells may develop into one or more types of cancer. These types of cancer are treated differently. They also differ in the chance of survival for the patient (prognosis). The 3 main types of testicular cancer are:

-Germ Cell Tumors: This is the most common type of testicular cancer. Germ cell tumors grow in the cells that make sperm.

-Stromal Tumors: These tumors grow in other parts of the testicles, such as the cells that make hormones.

-Secondary Testicular Tumors: These tumors develop from cancer that has spread to the testicles from other parts of the body.

Each of the 3 types is explained in more detail below.

Germ Cell Tumors

Over 9 out of 10 of cancers of the testicles start in the germ cells. As used here, "germ" means seed. These are the cells that make sperm.

Most germ cell cancers begin as CIS (carcinoma in situ). CIS is cancer that is not invasive. That is, it has not yet spread from where it started. When a cancer becomes invasive, its cells have entered the surrounding tissues. They may also have spread to other parts of the body through either the blood or lymph system. It takes about 5 years for CIS to progress to the invasive form of germ cell cancer.

The 2 main types of germ cell tumors are seminomas and nonseminomas.

-Seminomas: Seminomas start from the sperm-producing germ cells of the testicle. Within this group there are also subtypes.

-Nonseminomas: These germ cell cancers tend to develop earlier in life than seminomas. They are often found in men between their late teens and early 40s. There are 4 main subtypes. Most tumors are mixed with at least two different types. But all nonseminoma germ cell cancers are treated the same way, so the exact type is not that important.

Stromal Tumors

Tumors can also grow in the cells that make hormones and in the supportive tissues, or stroma, of the testicles. Stromal cell tumors are often benign (not cancer). They do not spread beyond the testicle, and they can be cured by surgical removal. But a few stromal cell tumors spread to other parts of the body (metastasize). Metastatic stromal cell tumors have a poor outlook because they do not respond well to chemotherapy or radiation therapy. The two main types of stromal tumors are Leydig cell tumors and Sertoli cell tumors.

Secondary Testicular Tumors

Secondary testicular tumors start in another organ and then spread to the testicle. Lymphoma is the most common cancer of this type. Among men over age 50, testicular lymphoma is more common than tumors that start in the testicle. Their outlook depends on the type and stage of lymphoma. The usual treatment is to remove the testicle. Surgery is followed by radiation and/or chemotherapy. In children with acute leukemia, the leukemia cells can sometimes form a tumor in the testicle.

Cancers of the prostate, lung, skin, kidney, and other organs can also spread to the testicles. The outlook for these cancers is usually poor. That's because these cancers generally spread widely to other organs as well. Treatment depends on the exact type of cancer.

<http://www.cancer.org/>

Staging of testicular cancer

Primary tumor (T)

The extent of primary tumor is classified after radical orchiectomy, and for this reason, a *pathologic* stage is assigned.

pTX: Primary tumor cannot be assessed*

pT0: No evidence of primary tumor (e.g., histologic scar in testis)

pTis: Intratubular germ cell neoplasia (carcinoma *in situ*)

pT1: Tumor limited to the testis and epididymis without lymphatic/vascular invasion; tumor may invade into the tunica albuginea but not the tunica vaginalis

pT2: Tumor limited to the testis and epididymis with vascular/lymphatic invasion, or tumor extending through the tunica albuginea with involvement of the tunica vaginalis

pT3: Tumor invades the spermatic cord with or without vascular/lymphatic invasion

pT4: Tumor invades the scrotum with or without vascular/lymphatic invasion

Regional lymph nodes (N)

NX: Regional lymph nodes cannot be assessed

N0: No regional lymph node metastasis

N1: Metastasis with a single lymph node mass 2 cm or less in greatest dimension; or multiple lymph nodes, none more than 2 cm in greatest dimension

N2: Metastasis with a single lymph node mass more than 2 cm but not more than 5 cm in greatest dimension; or multiple lymph nodes, none more than 5 cm in greatest dimension

N3: Metastasis with a lymph node mass more than 5 cm in greatest dimension

Distant metastasis (M)

MX: Presence of distant metastasis cannot be assessed

M0: No distant metastasis

M1: Distant metastasis

M1a: Non-regional nodal or pulmonary metastasis

M1b: Distant metastasis other than to non-regional lymph nodes and lungs

Serum tumor markers (S)

SX: Marker studies not available or not performed

S0: Marker study levels within normal limits

S1: LDH < 1.5 X N* AND

hCG (mlu/ml) < 5000 AND

AFP (ng/ml) < 1000

S2: LDH 1.5-10 X N* OR

hCG (mlu/ml) 5000-50,000 OR

AFP (ng/ml) 1000-10,000

S3: LDH > 10 X N* OR

hCG (mlu/ml) > 50,000 OR

AFP (ng/ml) > 10,000

References

1. Testis. In: American Joint Committee on Cancer.: AJCC Cancer Staging Manual. 6th ed. New York, NY: Springer, 2002, pp 317-322.

Stage	0	pTis, N0, M0, S0
Stage	I	pT1-4, N0, M0, SX
Stage	IA	pT1, N0, M0, S0
	IB	pT2, N0, M0, S0
		pT3, N0, M0, S0
	IS	pT4, N0, M0, S0
IS	Any pT/Tx, N0, M0, S1-3	
Stage	II	Any pT/Tx, N1-3, M0, SX
Stage	IIA	Any pT/Tx, N1, M0, S0
	IIB	Any pT/Tx, N1, M0, S1
		Any pT/Tx, N2, M0, S0
IIC	Any pT/Tx, N2, M0, S1	
	Any pT/Tx, N3, M0, S0	
IIC	Any pT/Tx, N3, M0, S1	
	Stage	III
Stage	IIIA	Any pT/Tx, any N, M1a, S0
	IIIB	Any pT/Tx, any N, M1a, S1
		Any pT/Tx, N1-3, M0, S2
IIIC	Any pT/Tx, any N, M1a, S2	
	Any pT/Tx, N1-3, M0, S3	
IIIC	Any pT/Tx, any N, M1a, S3	
	Any pT/Tx, any N, M1b, any S	

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Lot. No : 120214012611

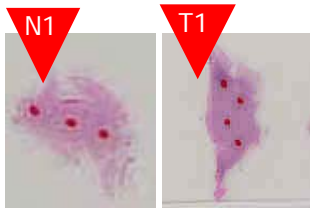


Fig 1. Scanned images for H&E stained slides.

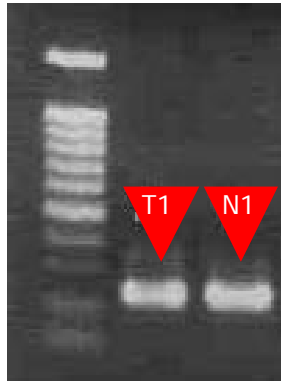


Fig2. RT-PCR for GAP3DH
Sample : Serial 10 sections of 10micrometer slice

	T1	N1
RNA conc. (ng/ul)	253.71	41.8
260/280	2	1.92

Pathology or other information:

AGE: 30
Sex: Male
Stage: T2N0M0

Pathology:

1. Testis, left, orchiectomy:

Seminoma with invasion beyond tunica albuginea (pT2) and associated with intratubular germ cell neoplasia.

1) Spermatic cord: Free of tumor.

* Post operation: radiotherapy