Case Based Urology Learning Program

Resident's Corner: *UROLOGY*

Case Number 12

Case Based Urology Learning Program

Editor: Steven C. Campbell, MD PhD
Cleveland Clinic

Associate Editors: Jonathan H. Ross, MD
Rainbow Babies & Children's Hospital, UH
David A. Goldfarb, MD
Cleveland Clinic
Howard B. Goldman, MD
Cleveland Clinic

Manager: Nikki Williams
Cleveland Clinic

Case Contributors: Eric A. Klein, MD
Cleveland Clinic

A 22 year old man seeks attention for a painful lump of 2 weeks duration in his right testis. He is otherwise healthy, denies urinary or systemic symptoms, and has no history of testis trauma.

What is the differential diagnosis?

What is the differential diagnosis?

The main diagnostic consideration with this history in a man between the ages of 15 -35 is primary testicular cancer. Other potential diagnoses include epididymo-orchitis and torsion, although the former is usually associated with urinary symptoms suggestive of infection, and the latter is usually seen in younger patients and of more acute onset.

What is the initial evaluation?

What is the initial evaluation?

The initial evaluation should consist of a physical examination with special attention to the testes and presence or absence of an abdominal mass or lymph nodes (in the supraclavicular, axillary and inguinal regions).

The evaluation should also include:

- Urinalysis to rule out UTI
- Serum tumor markers (AFP, HCG, and LDH) for testis cancer
- Scrotal ultrasound to confirm the presence of an intra-testicular mass.

In this patient, the physical exam and ultrasound are both consistent with an intratesticular mass. The U/A was negative, and serum AFP measured 160, serum HCG 75, and serum LDH was normal.

What is the clinical TNM stage for this patient?

What is the clinical TNM stage for this patient?

The TNM stage is T1NxMxS1.

For testis cancer the tumor markers are incorporated into the staging classification.

What is the next step?

What is the next step?

The next step is to perform a right inguinal orchiectomy. This will confirm the diagnosis and give important information about the type and aggressiveness of the presumed tumor.

Histology on the orchiectomy specimen reveals a mixed germ cell tumor consisting of 40% seminoma, 30% embryonal carcinoma, 20% yolk sac tumor and 10% mature teratoma. The tumor is confined to the testis but vascular invasion is present.

What is the next step?

What is the next step?

The next step is to complete the staging evaluation with a CXR or chest CT and a CT of the abdomen and pelvis, and repeat the tumor markers a few weeks later.

The CXR is normal, but the CT shows an 8 x 4 x 3 cm partly cystic mass in the interaortocaval area. Ten days after orchiectomy, the AFP measures 125 and the HCG is 60. Preoperatively, the markers were: AFP 160, HCG 75.

What is the complete TNM stage?

What is the complete TNM stage?

The complete TNM stage is T2N3M0S1. Note several important nuances to assigning stage:

1. the presence of vascular invasion connotes stage T2 even if the tumor is confined to the testis
2. nodal masses of > 5 cm in any dimension are assigned as N3
3. final S stage depends on the serum levels of tumor markers *post-orchiectomy*

What is the next step in management?

What is the next step in management?

This patient has a metastatic mixed germ cell tumor of the testis with elevated post-orchiectomy markers which is most appropriately treated by systemic chemotherapy followed by resection of residual nodal disease.

What chemotherapy should be used?

What chemotherapy should be used?

The choice of chemotherapy is determined by assigning the patient the correct risk category (good, intermediate or poor) according to the International Germ Cell Consortium (IGCCC). Risk group assignment depends on the primary tumor site (testis vs. retroperitoneum (RP) vs. mediastinum), site of metastases (RP/Lungs vs. other), and the level of serum markers, and is summarized in the table on the next page.

Risk Group	Nonseminoma	Seminoma
Good	Testis or RP primary *and* No non-pulmonary visceral mets *and* AFP < 1000 *and* HCG < 5000 *and* LDH < 1.5X upper limit of normal	Any primary site *and* No non-pulmonary visceral mets *and* Normal AFP Any HCG and LDH
Intermediate	Testis or RP primary *and* No non-pulmonary visceral mets *and* AFP >1000 but < 10,000 *or* HCG > 5000 but < 50,000 *or* LDH > 1.5 but < 10X normal	Any primary site *and* Non-pulmonary visceral mets *and* Normal AFP Any HCG and LDH
Poor	Mediastinal primary *or* Non-pulmonary visceral mets *or* AFP > 10,000 *or* HCG > 50,000 *or* LDH > 10X normal	None*

*Note that because of its chemosensitivity, there are no poor risk pure seminomas.

To which risk group does this patient belong?

To which risk group does this patient belong?

This patient belongs to the good risk group.

Which chemotherapy regimen is appropriate for good risk disease?

Which chemotherapy regimen is appropriate for good risk disease?

According to the IGCCC, and based on multiple randomized trials, patients in the good risk group can be treated with either 3 cycles of BEP (bleomycin, etoposide and platinum) or 4 cycles of EP (etopside and platinum). Chemotherapy for intermediate and poor risk groups is summarized in the table:

Risk Group	Therapy
Good	BEP x 3 or EP x 4
Intermediate	BEP x 4
Poor	BEP x 4 or TIP

The patient undergoes 3 cycles of BEP chemotherapy, with normalization of serum markers after the first cycle. A post-chemotherapy CT shows a residual 3 x 2 x 4 cystic mass in the interaortocaval region, and markers remain normal.

What is the next step in management?

What is the next step in management?

The next step is a post-chemotherapy RPLND, which should consist of a bilateral dissection from the ureters laterally, the renal hilum superiorly, and the bifurcation of the common iliac arteries inferiorly. This should include all of the tissue anterior, lateral, medial and posterior to the aorta and IVC within these boundaries. Sparing of the post-ganglionic sympathetic nerves that regulate ejaculation can be performed if doing so does not compromise complete resection of the residual mass. In this setting of a post-chemotherapy residual mass, pathology will include fibrosis about 40-45% of the time, teratoma 40-45% and viable cancer in about 10% (or less) of cases.

Pathology of the resected mass shows only mature teratoma.

What is the next step in management?

What is the next step in management?

The next step in management is observation, with serial physical exam, serum tumor markers, and imaging studies. Additional chemotherapy is warranted only in the case of viable cancer within the resected specimen.

Selected Reading

Campbell/Walsh Urology, 9th Edition, Chapter 29, Richie JP, Steele GS: Neoplasms of the Testis, 2007, pages 903-24.

Topic:

Oncology: Testis Tumors

Subtopics:

Bulky Retroperitoneal LNs, Staging, Chemotherapy, Postchemo RPLND