Metachronous testicular non-seminomatous tumor with an interval of 24 years from the first testicular seminoma.

Published on 01.11.2009

DOI: 10.1594/EURORAD/CASE.7905
ISSN: 1563-4086
Section: Uroradiology & genital male imaging
Case Type: Clinical Cases
Authors: Iosifidou S, Xinou E, Lytras K, Karoglou E, Ziti V, Gialamoudi M, Iosifidis D, Giannopoulos P.
Patient: 39 years, male

Clinical History:

A 39 year old man, with a history of pure seminoma at the age of 15, presented to our hospital with a painless hard nodosity in the left testicle. A metachronous non-seminomatous testicular tumour in the contralateral testicle with metastatic paraortic and supraclavicular nodes was diagnosed.

Imaging Findings:

A 39 year old man was referred to the urology clinic of our hospital for an alteration of the left testicle during self-examination. He had a history of pure seminoma at the age of 15, for which he underwent radical right inguinal orchiectomy followed by prophylactic radiotherapy and chemotherapy.

On physical examination, a painless hard nodosity was found in the upper half of the left testis. The concentration of AFP was 1831.79 ng/ml and that of HCG was 30 mIU/ml (normal ranges 0-7ng/ml and <3mIU/ml respectively). A testicular US was performed revealing a 2cm-heterogeneous mass with internal calcifications and septations at the superior pole of the testis, close to its posterior border. No vascularity was demonstrated inside the mass, but there were many and sizeable vessels at its periphery. Microlithiasis of the testis was also noted. The epididymis was of normal size and slightly overvascularized. Therefore, a testicular tumour was suspected.

MRI of the scrotum was performed but was also inconclusive. Thorax and brain CT scan was clear, while in abdominal CT a left paraaortic node of marginal size (~ 1cm) was depicted below the renal vessels. CT scan of the neck demonstrated an enlarged necrotic lymph node (4cm diameter) in the left supraclavicular fossa. Biopsy of the node revealed mixed germ-cell tumour (embryonal and choriocarcinoma). The patient underwent radical orchiectomy with implantation of testicular prostheses and received chemotherapy. Six months after surgery, the patient remains free of disease.

Discussion:

Testicular carcinoma accounts for 1% of all malignant tumours in men and is most common in young men 15-35 year. Germ-cell tumours (GCT) are the most frequent type (~95%) of which seminoma (SGCT) is the most common histologic subtype.

The incidence of a second occurrence in the contralateral testis ranges from 1-5%. The second tumour may be synchronous or metachronous (when the interval between the development of both tumours ranges from 4 months to 25 years and when a testicular US does not show a contralateral testicular mass at the time of the first operation). 80-85% of bilateral tumours occur metachronously, whereas 15-20% synchronously. Synchronous testicular tumours are nearly always of a similar pathology, while no significant correlation of histologic type between the first
and second tumours in men with metachronous tumours is reported. Risk factors for a second TGCT include cryptorchism, infertility, microcalcification, trauma, genetic predisposition, testicular atrophy, low sperm count, elevated follicle stimulating hormone levels, age at diagnosis of the first primary tumour <30 years and, in particular, the presence of testicular intraepithelial neoplasia (TIN), also known as carcinoma in situ (CIS). The incidence of bilateral germ-cell tumours appears to be much greater in patients with seminoma, as a primary tumour, especially in younger age groups.

Clinical staging includes physical examination, evaluation of serum tumour markers (alpha-fetoprotein (AFP), beta-human chorionic gonadotropin (?-HCG)), CT of the chest and abdomen. Bone scans and cranial CT are only performed when indicated. Metastases can spread hematogenously to lung, liver, brain, bone and through lymphatic routes. Most TGCT spread via the lymphatics; choriocarcinoma is a notable exception. Direct extension through the tunica albuginea with involvement of the scrotal skin is a rare, late finding.

Patients with unilateral tumour undergo radical inguinal orchiectomy. Postoperatively, patients at stage I (confined to testis) receive adjuvant radiotherapy or active surveillance or retroperitoneal lymph-node dissection (RPLND), those with stage II (positive nodes below diaphragm) radiotherapy or combination of RPLND/chemotherapy and those at stage III (positive nodes above diaphragm) chemotherapy. Treatment of a second testicular cancer is affected by the interval between the development of both tumours, histologic findings, clinical stage, mode and extent of the first tumour treatment. Testis-sparing surgery is ideal for patients with tumours <30mm, confined to the testis and normal preoperative testosterone. The question of whether a contralateral biopsy has to be performed at the time of orchiectomy to exclude TIN as a potential precursor of TGCT remains controversial, due to its low incidence and the morbidity of TIN treatment with local radiotherapy (infertility, impairment of testosterone production, superficial serous exsudate, pain).

Survival in patients with bilateral testicular carcinoma is excellent in those who receive proper staging and therapy and does not appear to be worse than in patients with unilateral tumour. Follow-up and surveillance should be lifelong and patients should examine themselves regularly. Implantation of testicular prostheses and androgen substitution following standard guidelines pare the way for physical, sexual, psychological and social rehabilitation.

**Differential Diagnosis List:** Metachronous non-seminomatous testicular tumor with metastatic paraaortic and supraclavicular nodes.

**Final Diagnosis:** Metachronous non-seminomatous testicular tumor with metastatic paraaortic and supraclavicular nodes.

**References:**


First testicular tumor 24 years ago. A color Doppler transversal image of the right testis demonstrates a well defined, heterogeneous, hypoechoic lesion with vascularity, which corresponds to a pure seminoma. **Origin:**
**Figure 2**

**Description:** Metachronous mixed tumor of embryonal cell tumor and choriocarcinoma in the contralateral testis. A longitudinal, comparative image of both a color Doppler and grey-scale image of the left testicle depicting a lesion in the superior pole, with heterogeneous echo pattern (calcifications and septations) and increased vascularity. **Origin:**
Description: A 3-D US analysis of the same lesion showing the heterogeneous echo pattern. Origin:
Description: MRI of the scrotum. Coronal T2 and Origin:
Description: T1 gadolinium-enhanced weighted-images demonstrate a heterogeneous mass of low-intensity (4a) which shows mild peripheral enhancement. Origin:
Figure 5

**Description:** Longitudinal color Doppler US and **Origin:**
**Description:** axial CT scan of the neck showing an enlarged (metastatic) left supraclavicular node (~4cm) with areas of necrosis and mild vascularity. **Origin:**
Description: Axial abdominal CT scan showing an enlarged (metastatic) left paraortic node. Origin: