Yolk tumor on testicular ectopia about a case and review of the literature: Contribution of imaging

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Abstract

Vitellin or endodermal sac tumours are rare germ malignant tumours. They account for less than 5% of germ cell tumours. They are aggressive tumors that preferentially affect children and young people. We illustrate here the importance of multimodality imaging for the diagnosis of vitellin sac tumor so we present a literature review about the case studied.

Keywords: Yolk sac tumor; testicular ectopy; young subject; scrotal ultrasound; CT scan; chemotherapy; surgery.

Introduction

Malignant tumors of the testis are in 98% of cases germ cell tumors (GCTs), divided into pure seminomatous GCTs (PSGTs) and non-seminomatous GCTs (NSGTs) in 55 and 45% of cases [1]. Since 2016, the WHO classification takes into account their histogeneses and molecular characteristics. The yolk sac tumor is part of the TGNS, presenting radiologically on a testicular ultrasound as a hypoechoic nodule, more or less homogeneous compared to the rest of the normal testicular parenchyma, sometimes with cystic components or calcifications. Histologically by the presence of tumor cells organized around characteristic vessels forming SCHILLER-Duval bodies. These tumors are rare in adults and represent 72% of testicular tumors in children aged 1 to 2 years [2-3]. In this article, we present the clinical case of a patient with a yolk sac tumor of the testis on testicular ectopy at the metastatic stage under chemotherapy.

Objective

J.O., a 25-year-old patient with a history of right testicular ectopy, was admitted to the emergency room with a history of sub-occlusion (chronic constipation for 6 months) that had been worsening for 2 months prior to his admission. The clinical examination found a conscious patient, hemodynamically and respiratorily stable, WHO 1-2, a distended abdomen with a hard abdomino-pelvic mass, fixed in both planes and measuring 10x5cm, the testicular examination revealed an empty right bursa and left testicle in place, the lymph nodes were free. The whole evolving in a context of apyrexia and weight loss quantified at 15kg / 6 months

A biological assessment was performed and showed normocytic normochromic anemia with hemoglobin at 8g/dl, WBCs at 11,000/mm, and renal failure with urea at 0.70G/L, creatinine at 40Mg/. Scrotal ultrasound and an initial CT scan showed a large retroperitoneal abdominal and pelvic process measuring 23x12.5cm responsible for bilateral UHN. Tumor marker assays showed an elevation of lactic dehydrogenase (LDH) to 1028 IU/L (normal 4.5), as well as alpha-fetoprotein, which was over 400 ng/ml (10000ng/ml). The diagnosis of a testicular tumor was evoked, an ultrasound-guided biopsy of the peritoneal mass and immunohistochemistry were performed. Anatomopathological examination associated with IHC (anti alpha1 FP + and anti pancytokeratine +, anti OCT 4 AND anti CD30 -) oriented the diagnosis in favour of a yolk sac tumor.

The patient benefited from a double J catheter at the UHN with a good improvement of the renal function (creat at 9 and then at 7 Vs 40 and urea at 0.17) and received a primary chemotherapy type BEP (bleomycin, etoposide and cisplatin) with a good clinical tolerance. The thoraco-abdomino-pelvic imaging showed the appearance of a secondary pulmonary location contrasting with the decrease in size of the abdomino-pelvic tumor process. Tumor marker monitoring revealed a decrease in LDH levels from 500 to 288 IU/L vs 1028 and AFP from 10,000 to 612 ng/ml. At the end of the treatment, thoraco-abdomino-pelvic imaging showed a decrease in size of the abdomino-pelvic process coming in contact with the rectum.

Case Report
without separation line and stability of the secondary pulmo-

nary localizations. The patient was operated on with resection of the testicular tumor mass and the rectum estimated at R2 and placement of a clip on the right lateral pelvic wall and re-
alization of a colo-supra-anal anastomosis. 4 months later, the
evolution was marked by a recurrence of the abdomino-pelvic
mass metastasizing to the liver and lymph node level with sign
of peritoneal carcinosis. Patient in poor general condition un-
der chemotherapy and radiological surveillance. The follow-
up is 2 years.

Figure 1: A: axial section of the abdominal and pelvic mass before CT
B: Ureterohydronephrosis
C: coronal reconstruction of the abdomino-pelvic mass before CT
D: axial section of the abdomino-pelvic process after 4 CT scans; clear reduc-
tion of the tumor volume invading the rectum
E: coronal reconstruction of the abdomino-pelvic mass.

X-ray images in axial and coronal section parenchymal and ab-
dominal window showing recurrence of the tumor mass with
secondary hepatic and pulmonary localizations and peritoneal
carcinosis.

Discussion

From an epidemiological point of view, testicular germ cell
tumors are rare tumors, and represent 1 to 2% of cancers in
men [7] (3.5% of tumors of the urogenital system). They are
the leading cause of solid tumors in young men with a peak
incidence between 30 and 34 years of age [14].

The post pubertal yolk sac tumor, also called endodermal si-
nus tumor, is a malignant germ cell tumor whose morphologi-
cal aspects are reminiscent of extra embryonic structures: yolk
sac, allantois and extra embryonic mesenchyme. Most patients
are between 15 and 40 years of age, although later cases have
been described [15]. The yolk sac tumor is almost always part
of a mixed germ cell tumor and is found in 44% of TGNS.Pure
forms are exceptional representing 0.6% of germ cell tumors
of the testis [7]. In this case, the yolk sac tumor was a pure
form, occurring in a 25-year-old patient with right testicular
ectopia; it was a tumor differentiated in the extraembryonic
sense. Some risk factors for germ cell tumors are consensual
[8] testicular dysgenesis syndrome (cryptorchidism, hypospa-
dias, hypo or infertility), personal or family history of TG, tes-
ticular atrophy (<12ml), others are discussed such as heavy
cannabis use, pesticides, organic solvents, morphometry [9].

Testicular Doppler ultrasonography is the examination indi-
cated as the first line of treatment for intragonadal germ cell
tumors. It has a sensitivity close to 100% for the positive ex-
tra and intra-testicular diagnosis of a scrotal mass [4].It allows
confirmation of the presence of a tissue process by specifying
the site, the semiological characteristics: size, contours, limits,
echogenicity (it typically shows a hypoechoic intra-testicular
image), and the vascular nature of the tumour, and thus it
explores the contralateral testicle and allows its surveillance.
The risk of developing a second tumor is increased if there
are grade 3 micro-calcifications [11]. In our series, ultrasound
revealed a well-limited oval abdominal and pelvic tumour pro-
cess, with a tissue echostructure and a minority cystic com-
ponent measuring 168x102x155m with bilateral pyelocalic
dilatation.

The learned societies of radiology (SFR, HAS) consider that CT-
PET is systematically recommended for the initial assessment
and follow-up of TG without and with injection of iodinated
contrast medium, and allows the detection of lesions larger
than 3 mm, showing a mixed mass, solid or cystic with sig-
nificant heterogeneity due to hemorrhage or necrosis, Calci-
fications are noted in 40% of the situations, as shown in our
case where the TAP CT mentioned a voluminous heterodense
abdomino pelvic process containing a zone of liquefation and
fleshy contents as well as vessels inside with uretero hydro
nephrosis The sensitivity of 80% for the analysis of retroperi-
toneal adenopathies and the evaluation of their size according
to the largest transverse diameter (RECIST criteria) [5] allows
the initial staging of this lymph node extension from N1 to N3
(16) (Table 1).

Testicular cancers metastasize by lymphatic and hematog-
enous routes. The first lymphatic relays are the latero-aortic
areas immediately under the kidneys: indeed, in the embryo,
the testis forms near the kidneys and then descends into the
bursa. At a more advanced stage, the supra-diaphragmatic,
mainly left supra-clavicular, and mediastinal nodes may be in-
vaded.

Hematogenous dissemination occurs via the spermatic vein
and the inferior vena cava: it is mainly responsible for pulmo-
nary localizations, as in our patient’s case, and, much more
rarely, for hepatic, cerebral and bone localizations. It should
be noted that in 10% of cases, the histological nature of the metastases differs from the primary germ cell tumor. Finally, it should be noted that rare germ cell tumors are extragonadal, retroperitoneal, mediastinal or pineal in location including.

Magnetic resonance imaging is not routinely recommended because of its cost and limited availability, but it can replace CT in cases where iodine injection is contraindicated. It can be useful in residual masses by identifying the operative difficulties that may be encountered or in the presence of an atypical lesion.

Positron emission tomography (PET scan) is not recommended for the initial staging of TST. It is currently being evaluated in stage I GIST [6]. For other examinations including spinal CT, bone scan or liver ultrasound, are indicated depending on the clinical context dictated by the metastatic disease. Brain CT or brain MRI are recommended in cases of extensive metastatic TGNS of the lungs and in forms with poor prognosis.

The diagnosis remains histological after inguinal orchiectomy in non-metastatic forms [10] and reveals two morphological features: intracytoplasmic or extracellular hyaline globules (SCHILLER-Duval bodies) and intracellular deposits of the basement membrane arranged in a band. The histological study of our case reveals a myxoid, trabecular and microcystic aspect consistent with a yolk sac tumor. However, yolk sac tumors can mimic other types of TG and non-germline tumors especially in metastatic and extra gonadal sites, for this reason immunohistochemical markers are sometimes used to facilitate and support the diagnosis [10].

Sperm cryopreservation at the CECOS is recommended, ideally before orchiectomy and imperatively before any chemotherapy, radiotherapy, or retroperitoneal surgery. It has a medico-legal value [12]. Chemotherapy with four cycles of BEP is the reference treatment for metastatic non-seminomatous germ cell tumors. The other therapeutic options are: surveillance, chemotherapy associated or not with surgery.

Conclusion

The extension workup for testicular cancer uses the international TNM classification. The T stage is a post-operative pT stage (post-orchidectomy). The N and M stages are determined by a thoraco-abdomino-pelvic CT scan (lymph node metastases in the medial retroperitoneum and visceral pulmonary localizations especially). Monitoring under and after treatment is performed by multiple thoracic-abdominal-pelvic scans, the rhythm of which depends on multiple parameters (type of tumor, initial stage) and by ultrasound scans of the remaining testicle. A PET scan can provide information in case of a residual lymph node mass after chemotherapy.

References


