

TESTICULAR PLASMACYTOMA, AN UNUSAL TESTICULAR TUMOR

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We report the case of a 78-year-old man with recent diagnosis of Kahler disease and a non-tender swollen left hemiscrotum. Ultrasound findings showed an intratesticular, hypervascular hypoechoic lesion. MRI imaging demonstrated general appearance of a malignant lesion. Specific characteristics however, could not be withheld on MRI. Orchidectomy was performed and plasmacytoma was demonstrated at pathological examination. Although plasmacytoma of the testis is extremely rare, it should be included in the differential diagnosis taking into account the ultrasound and MRI appearances, especially in elderly patients with known Kahler disease.

Key-word: Plasmocytoma.

Case report

A 78-year old man with a history of CABG and monoclonal gammopathy of undetermined significance (MGUS) 12 years ago, presented at the emergency room with retrosternal chest pain. In the last months the pain has increased and he lost 8 kg due to lack of appetite. Chest X-ray showed an osteolytic rib lesion on the left. Further radiological work-up with CT-scan of the chest-abdomen and magnetic resonance imaging (MRI) of the whole spine revealed multiple osteolytic bone lesions. A sternal lesion probably induced the initial retrosternal complaints. A bone narrow biopsy was performed and laboratory studies revealed 12% plasmocytes in his bone marrow aspirate which is normally 0-4%. The diagnosis of Kahler disease was made and dedicated chemotherapy was started.

A few weeks later during chemotherapy, the patient mentioned a painless enlargement of the left hemiscrotum. Physical examination demonstrated a hard non-tender left testis. Ultrasonography examination of the scrotum showed an intratesticular hypoechoic heterogeneous relatively well-demarcated solid tissue mass (3 x 2,5 x 2 cm) with inset hyperreflective strands and distinct hypervascularisation at color Doppler examination. No hydrocele was seen (Fig. 1A and 1B). Additional MRI-evaluation was performed (Fig. 1C-E). On T1 weighted images with fat suppression, the tumor was hypointense to the muscle and iso-intense compared to the testis parenchyma, with hypointense capsule (Fig. 1C). Gadolinium-enhanced

T1 weighted imaging showed some inhomogeneous intralesional enhancement (Fig. 1D). On T2 weighted images, the tumor was hypointense with some inset hyperintense foci (Fig. 1E).

Left orchiectomy was performed with excision of a hard and fleshy tumor with good circumscribed borders (Fig. 1F). Microscopic pathological examination revealed a plasmacytoma. Rete testis, tunica albuginea and epididymis were free of tumor cell infiltration.

Discussion

Most intratesticular solid masses represent malignant tumors, in contrast with extratesticular masses, which are nearly always benign. Germ cell tumors represent 93% of intratesticular malignancy (1). In elderly men (60 years and older), lymphoma is the most common testicular malignancy.

Plasma cell neoplasms are a group of entities characterized by production of a monoclonal immunoglobulin. Depending on the appearance of a single lesion or multiple lesions, we respectively speak about solitary plasmacytoma and multiple myeloma (MM).

Plasmacytomas are most commonly found in bone narrow of the axial skeleton (skull, spine, ribs and pelvis) due to a favorable narrow environment. However extramedullary plasmacytoma (EMP) can be found in soft tissue all over the body. They are most common located in the in the upper aerodigestive tract of the head and neck region but may also occur in the gastrointestinal tract, lymph nodes, central nervous sys-

tem etc. Testis is rarely involved. Plasmacytoma is therefore not usually included in the differential diagnosis. Based on the American Testicular Tumor Registry were 6000 testicular and peritesticular tumors were encountered, only 7 cases (0,17%) of testicular plasmacytoma were found (2). In 2002, Anghel et al. made a review were only 51 cases of testicular plasmacytomas could be found in literature. 34 of these cases had previously or concurrent MM. The other 17 cases were solitary testicular plasmacytomas. However, many of these initially solitary lesions progressed to MM. Only 6 out of 51 cases didn't develop MM with a median follow-up time of 15 months. This relatively short follow-up cannot exclude the subclinical presence of MM. The incidence of testicular and epididymal plasmacytomas have a range between 0,03%-0,1% of all testicular neoplasms and 0,6-2,7% of all MM (2-4).

It is known that the testes serve as a sanctuary site for hematologic malignancies as a result of the testicular blood-gonad barrier that inhibits the accumulation of chemotherapeutic agents. This makes male sex already a negative prognostic factor for treatment outcome in acute lymphoblastic leukemia (5). Rosenberg et al. (6) proposed that the testicles might also serve as a sanctuary site where solitary extramedullary myeloma of testicle is concerned. Since patients with multiple myeloma have higher survival rates nowadays, the incidence of extramedullary myeloma like testicular plasmacytoma will probably rise in the future.

Ultrasound does not provide the histologic and morphologic diagnosis but gray-scale US is nearly 100% sensitive for detection of testicular tumors. Color Doppler and power Doppler US demonstrate increased vascularity in the majority of malignant tumors and help to better define testicular involvement. However, hypervascularity is not specific

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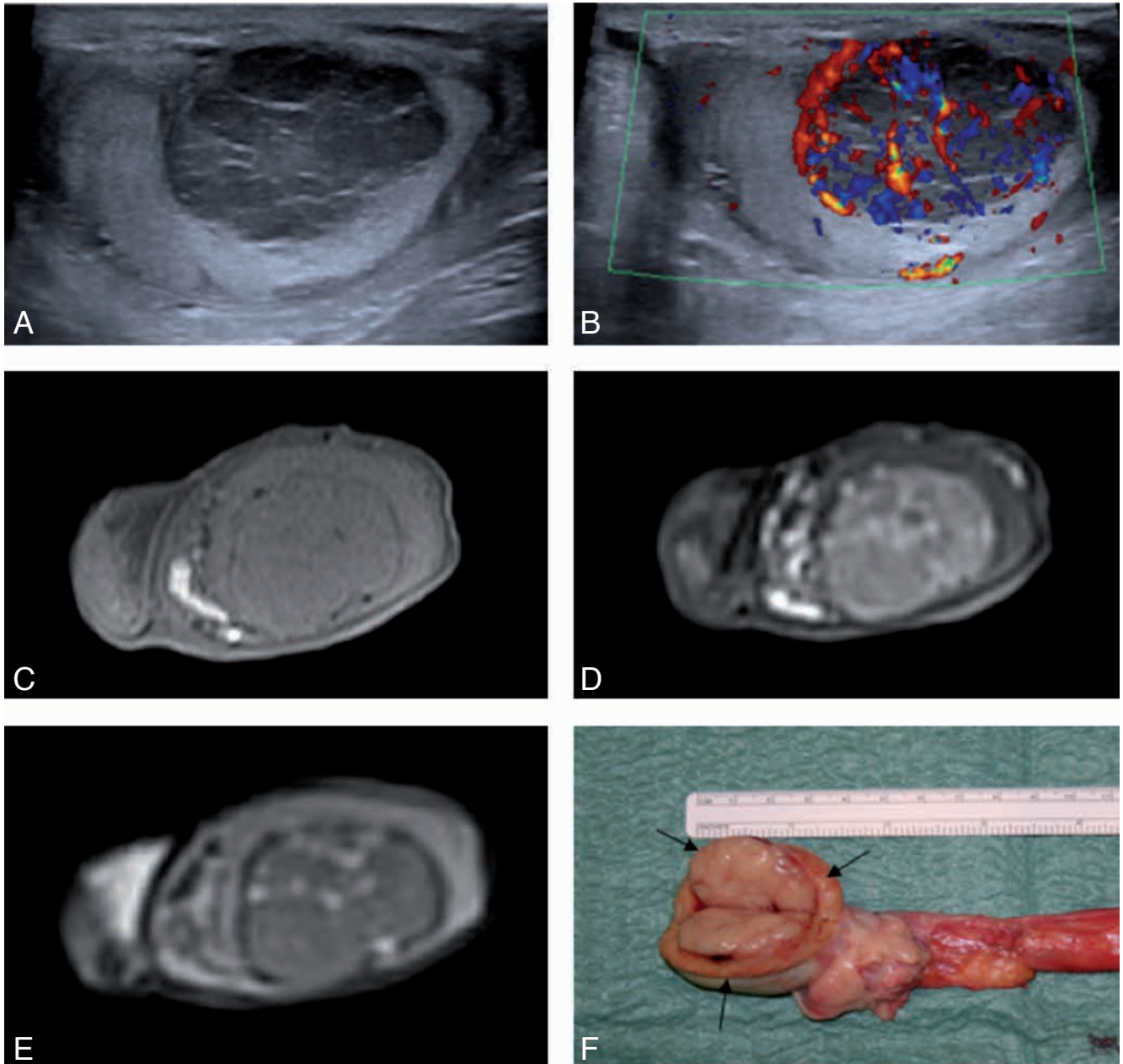


Fig. 1. — Grayscale (A) and color Doppler (B) ultrasound findings of a plasmacytoma. Appearance of the same plasmacytoma on T1SE (C), T1SEFS + Gadolinium (D) and PDT2 (E) weighted MRI imaging. Macroscopic opened view of a testicular plasmacytoma (F).

enough for a diagnosis of malignancy (7).

On gray-scale ultrasound, plasmacytoma of the testicle appears hypoechoic that can either be heterogeneous or homogeneous (8-12). Bude (10) noticed that the hyperemia of a plasmacytoma is much greater than usual experience with testicular germ cell neoplasms and similar to hyperemia seen in testicular lymphoma or leukemia. Our ultrasound images are consistent with these findings of marked hypervascularity (Fig. 1B).

There are a variety of intratesticular processes, such as epidermoid cyst, metastasis and especially lymphoma in elderly men that must be considered in the differential diagnosis. Epidermoid cyst is the most common benign intratesticular lesion and can be differentiated because of its typically well-defined mixed-echogenicity with an onion-skin or target appearance and no internal flow. Metastatic testicular disease is rare and should be considered if there is a known primary malignancy in an advanced stage with

multifocal lesions. Most common primary sites of testicular metastasis are prostate tumors (35%), lung tumors (19%) and malignant melanoma (9%) (13). Lymphoma is the most common testicular malignancy in men older than 60 years. It has an infiltrative nondestructive nature with a homogeneous hypoechoic US appearance and marked hypervascularity. Diagnosis of lymphoma should be suspected if there is involvement of both the testis and infiltration outside the testis into the epididymis (14).

Thus if a hypoechoic intratesticular tumor with marked hyperemia is seen on ultrasound in an elderly man, lymphoma is top diagnosis however plasmacytoma should be considered especially in a patient with known MM.

MRI is not the first modality of choice for evaluating scrotal lesions but it can be a useful adjunct. It can differentiate benign from malignant lesions with high accuracy and provide a preoperative classification of the histologic type of testicular tumors (15, 16). Adding gadolinium-based contrast material allows more accurate assessment of the vascularity of testicular lesions than color Doppler US does.

To our knowledge, testicular plasmacytoma has never been described on MRI.

Malignant lesions show on MRI mostly a low or mixed signal intensity when compared to normal T1- and T2 weighted imaging of the testis. In contrast, homogenous lesions with high signal intensity on T1- and/or T2- weighted imaging, appear to be generally benign. Our case confirms that these statements also apply to testicular plasmacytoma. As previously said, our case showed heterogeneous low signal intensity on T2-weighted images (Fig. 1E) and low to intermediate signal intensity on T1-weighted images (Fig. 1C).

The tumor rim had a hypo-intense band on T1 weighted imaging corresponding to a fibrous capsule. T1 images with Gadolinium (Fig. 1D) showed inhomogeneous intralésional contrast enhancement which is also a typical malignant feature (17).

Conclusion

Plasmacytoma of the testis is extremely rare and the differential diagnosis of scrotal enlargement is large. However age, the lack of clinical findings as pain and hypervascularity on US can narrow the differential diagnosis a lot. In our case, a diagnosis of extramedullary testicular plasmacytoma could be suspected because of recent diagnosis of MM. On ultrasound, plasmacytoma of the testis appear as hypervascular hypoechoic lesions that can either be heterogeneous or homogeneous. MRI imaging confirmed the general appearance of a malignant lesion. No specific characteristics could be withheld on MRI however.

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