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Case Report

Non-seminomatous germ cell tumor with bone metastasis only at diagnosis: A rare clinical presentation

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Abstract Bone metastasis of non-seminomatous germ cell tumors (NSGCT) of the testes is a rare event and even more uncommon at initial presentation. Generally, bone lesions are discovered in the presence of concurrent retroperitoneal lymph node or visceral disease. However, in this case, a 37 years old male complaining of a growing testicular mass was found to have isolated bone metastasis with associated caudaequina syndrome without apparent abnormal findings on initial computed tomography (CT) scans. Continued neurologic symptoms prompted further evaluation with magnetic resonance imaging (MRI), which demonstrated multiple sites of bone metastasis without evidence of retroperitoneal lymph node or visceral organ involvement. This case represents a rare clinical presentation and disease manifestation of NSGCT.

1. Introduction

Bone metastasis at initial presentation of non-seminomatous germ cell tumor (NSGCT) of the testes is an uncommon event, as it is usually associated with concurrent retroperitoneal lymph node or visceral disease. We present a case of NSGCT with an isolated bone metastasis that was not documented on initial staging computed tomography (CT)

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that caused caudaequina syndrome, without any lymph node or visceral involvement and only discovered after additional imaging with magnetic resonance imaging (MRI).

2. Case report

A 37-year-old man presented to our center with a 6-month history of a growing right testicular mass. One week prior to presentation at our center the mass had become acutely painful prompting the patient to seek treatment at an outside emergency center. A right-sided mass concerning for malignancy was found on testicular ultrasound and the patient was referred to our center for further evaluation. He reported right testicular pain, left buttock pain radiating to his left lateral thigh, constipation, and difficulty urinating. He denied nausea, vomiting, fever, personal history of cryptorchidism, trauma, sexually transmitted infections, or urinary tract infections. His past surgical history was unremarkable. He denied family history of testicular cancer. Physical exam revealed a well-circumscribed, hard mass involving the right testicle, without tenderness to palpation or evidence of tracking along the spermatic cord. The left testicle was palpably normal. Serum α-fetoprotein (AFP), β-human chorionic gonadotropin (β-hCG) and lactic dehydrogenase (LDH) levels were elevated at 2613 ng/mL, 7.1 mIU/mL, and 1130 IU/L, respectively. All other routine laboratories were normal. A CT of the abdomen and pelvis with and without contrast showed a mass in the right testicle consistent with NSGCT, without evidence of retroperitoneal lymphadenopathy or metastatic disease. He was prescribed a bowel regimen and hydrocodone for pain management, and was scheduled for orchiectomy.

He returned 3 days later with worsening testicular pain, urinary retention and constipation, which the patient attributed to pain medications. At that time he underwent emergent radical right inguinal orchiectomy. Pathology demonstrated a 12 cm $\times$ 9 cm $\times$ 6 cm NSGCT with extensive necrosis, composed of 85% immature teratoma, 10% yolk sac tumor, and 5% embryonal carcinoma, with invasion of the tunica vaginalis (pT2 cN0 cM0 SX; Stage IB) (Fig. 1). There was no evidence of lymphovascular infiltration and all margins were negative. He was discharged on post-operative day 1 with routine follow-up.

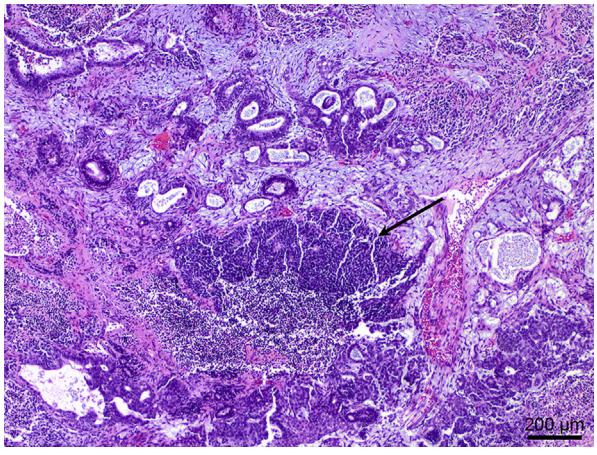

Figure 1 Histologic section of testicular mass. Teratomatous component (arrow) with areas reminiscent of immature neural tissue.

The patient returned on postoperative day 2, with continued constipation, urinary retention and severe rectal pain. He also continued to have left buttock pain radiating down the left thigh. He had no focal deficits on neurologic exam. Abdominal X-ray showed no evidence of ileus or obstruction. MRI of the pelvis with and without contrast was obtained and showed a large infiltrative mass concerning for metastasis in the sacrum as well as the left acetabulum (Fig. 2). Scattered foci of metastatic disease were prominent in the ilea, bilateral proximal femora, and lumbar vertebrae. There was no evidence of retroperitoneal lymphadenopathy or visceral organ metastasis. A percutaneoussacral biopsy was obtained that confirmed metastatic NSGCT (Fig. 3).

The patient was reclassified as stage IIIC with poor risk and immediately started on etoposide, cisplatin, and bleomycin (BEP), with dexamethasone. He had significant improvement of constipation, urinary retention and pain after initiation of chemotherapy. Due to the rapid tissue response to chemotherapy, radiation therapy to the spinal lesion was withheld and planned only in the event that chemoreduction did not provide an adequate symptomatic response. After two cycles of BEP the patient developed characteristic post-inflammatory pulmonary changes on chest CT likely secondary to bleomycin. He was switched to taxol, ifosfamide, and cisplatin (TIP), receiving three cycles. The patient responded well to chemotherapy initially, but became resistant by the

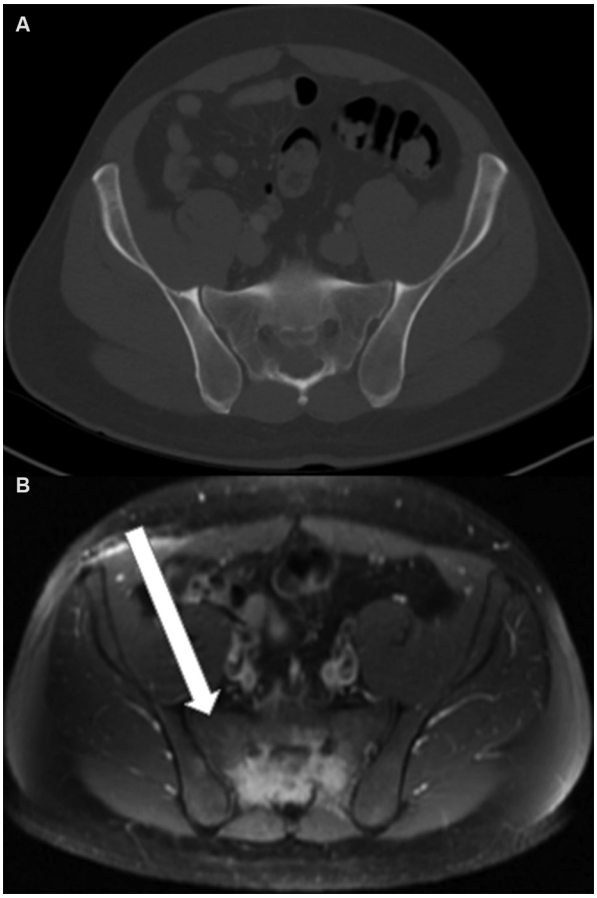

Figure 2 CT (A) and MRI (B) of the pelvis without visible sacral lesion (arrow).