



Seminoma: diagnosis at 55 years of age

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It is widely accepted that males with cryptorchidism, or undescended testes, are at an increased risk of developing testicular cancer, specifically germ cell tumors. Seminomas are the most common type of germ cell tumors and typically affect males between the ages of 30 and 45. They commonly present as a painless testicular mass. This case report describes the unexpected finding of a malignant seminoma in a 55-year-old male who presented with a deep vein thrombosis of the leg and an incidental abdominal mass. Osteopathic medicine emphasizes helping each person achieve a high level of wellness by focusing on health promotion and disease prevention. Because of its atypical presentation, this case report helps us refresh our medical knowledge of the diagnosis and management of seminomas and provides an example of the importance of patient education in disease prevention.

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Case report

A 55 year old white male presented to the clinic with 2 day history of right thigh swelling, described as warm and painful with walking. He characterized the pain in the right leg as a 9/10, throbbing, and non-radiating. His pain improved with rest and riding his bicycle. He also complained of an abdominal mass present for what the patient estimated as 8-9 years. The abdominal mass was located in the right lower quadrant, was non-tender, immobile, hard, and estimated to be the size of an egg. The mass was not mentioned in any of his three previous office visit notes. Upon further investigation it was evaluated in an ER visit in April 2009, but on exam appeared to be a reducible abdominal wall hernia. The patient had been instructed to follow up with his primary care physician for recheck, and was lost to follow up until his admission in November 2009. He further denied shortness of breath, chest pain, or palpitations. There was no recent trauma, immobility, surgery, or weight loss.

His medical history was significant for a myocardial infarction two years prior. He had no prior surgeries. Maternal family history was positive for cancer of unknown origin, and social history was positive for smoking one pack of cigarettes daily for 35 years and negative for alcohol or illicit drug use. Pulmonary review of systems was positive for chronic "smoker's cough," and gastrointestinal review of systems was negative for nausea, vomiting, abdominal pain, diarrhea, dysuria, and weight loss. He stated that he had always been thin. All other systems were negative for abnormalities.

Physical examination revealed a frail, disheveled man in moderate distress secondary to pain. Vital signs were height 69 inches, weight 125.3 pounds, body mass index 18.6, blood pressure 112/59, and pulse 78. Abdominal examination noted a soft, nontender, immobile, 4-cm egg-shaped mass in the right lower quadrant (RLQ). There were normal bowel sounds and no hepatosplenomegaly, scars, or lesions. Genitourinary examination showed normal male genitalia except for an undescended right testicle. Right lower leg examination revealed a painful, mildly erythematous right calf, 3 cm larger than the left; and right thigh, 6 cm larger than the left. Homan's test was positive on the

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right leg. The rest of the physical examination was unremarkable.

On admission, studies included an abdominal computed tomography (CT) scan, scrotal ultrasound (US), and right thigh venous Doppler imaging. The CT revealed a 9.2 × 11.2-cm RLQ mass. Upon review of the patient's records, he had the same mass, though smaller, on a previous CT scan ordered 8 months earlier (shown below) by an emergency room physician in evaluating him for abdominal pain. At that time the ER physician believed this to be a reducible abdominal hernia, and recommended a follow up appointment with his primary care physician, which the patient did not do until his admission. The scrotal US showed an empty right scrotal sac, and no testicle separate from the RLQ mass. The doppler showed a deep vein thrombosis (DVT) of the distal external iliac vein with absent flow to the femoral and popliteal veins. Laboratory studies included a complete blood count (white blood cell count 7.2 K/mm³, hemoglobin 13.1 g/dL, hematocrit 38.7%, and platelets 169 K/mm³); basic metabolic panel (sodium 134 mmol/L, potassium 4 mmol/L, calcium 9 mg/dL, blood urea nitrogen 12 mg/dL, creatinine 0.97 mg/dL, glucose 96 g/dL); carcinoembryonic antigen (CEA) 0.8 ng/mL; alpha-feto-protein (AFP) 1.3 ng/mL; and a prostate-specific antigen (PSA) 1.61 ng/mL, which were all within normal limits. The serum lactate dehydrogenase (LDH) was markedly increased at 548 IU/L (normal, 83–183 IU/L). Biopsy of the abdominal mass confirmed a diagnosis of stage IIc malignant seminoma, indicating his malignancy was within the undescended testicle and at least one abdominal lymph node. The patient received combination chemotherapy of etoposide and cisplatin (Figures 1 and 2).

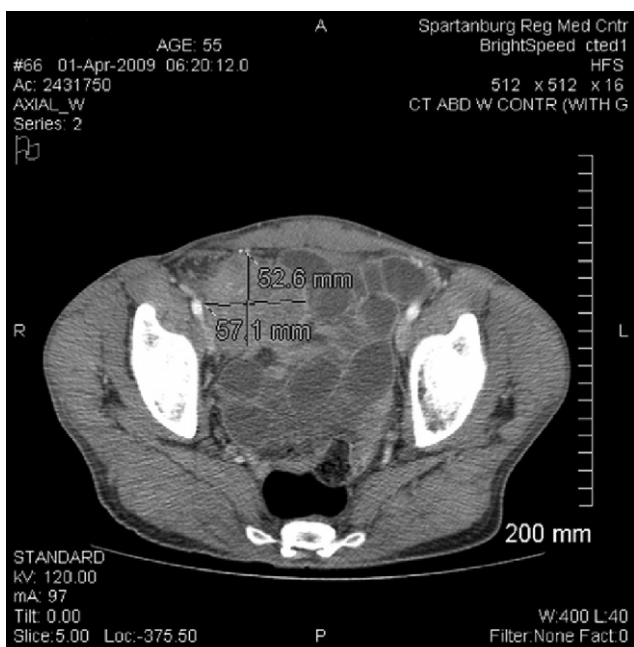


Figure 1 April 2009 CT: 5–6-cm mass in the RLQ, extending into the inguinal canal.

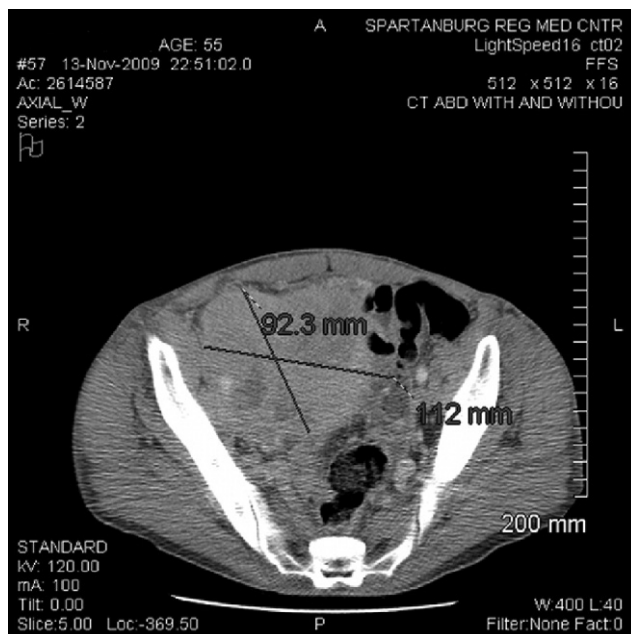


Figure 2 November 2009 CT: increase in R-sided mass, suspicious for occlusion of right common femoral/external iliac veins, mild right-sided hydronephrosis.

Discussion

The US Preventive Services Task Force recommends against routine screening for testicular cancer in asymptomatic adolescent and adult males. There has been little evidence available to evaluate the accuracy, yield, or benefits of screening. There are currently two methods to potentially screen for testicular cancer—clinical examination by a physician, and self-examination by the patient. However, there is no evidence that teaching men how to examine themselves for testicular cancer would be beneficial, even among high-risk groups that include men with a history of undescended testes or testicular atrophy.¹ In our case, the patient had never been advised to do testicular self-examinations, nor was it discovered that he had an undescended testis.

Cryptorchidism is one of the most common congenital genitourinary abnormalities in males, occurring in about 3% of term male infants (higher in preterm infants). It is an undescended testicle, unilateral or bilateral, and can be congenital or acquired. About two thirds of those affected will have spontaneous descent by age 3–6 months of age. For those who do not, surgical correction (orchiopexy) is recommended by 6–15 months of age. Benefits from early orchiopexy include greater chance for fertility and earlier detection of testicular cancers.²

Patients with cryptorchidism are at increased risk for developing germ cell tumors, such as seminomas, embryonal carcinomas, teratomas, or yolk sac tumors. About 5% of testicular cancers are attributable to cryptorchidism (bilateral > unilateral). Risk stratification is based on location of the testes, with an increased risk of malignancy when the undescended testes are intraabdominal vs within the inguinal ring.⁴

General history and physical examination

For general history, 65 to 95% of men have only a painless, solid testicular mass, noticed incidentally by themselves or their sexual partners. Approximately 10 to 15% will present with unilateral swelling of the scrotal sac, often confused with epididymitis. Patients may have testicular heaviness or dragging. Rarely, this presents with gynecomastia or other signs of metastasis, such as supraclavicular lymphadenopathy, lumbar back pain, or unilateral lower extremity swelling.²

The examination should begin with a bimanual examination of the scrotum, starting with the normal testis. It should be freely mobile and easily palpated between the fingers, providing a baseline for comparison with the opposite scrotal sac. If the affected side does not have a palpable testis, then attempt to locate the testis along the route of descent. Evaluation should focus on any palpable masses, including hydroceles, concentrating on consistency, mobility, and involvement of other structures. Additional physical examination should include palpation for supraclavicular lymphadenopathy, the abdomen for possible visceral involvement, and lower extremities for swelling or pain, suspicious for a DVT.²

Testicular cancer is the most common malignancy among males 15 to 35 years old. They consist of germ cell tumors and nongerminal tumors, with germ cell tumors comprising 95% of cases. There are two forms of germ cell tumors—pure seminomas (most common form of germ cell tumor, up to 50% of cases) and nonseminomatous germ cell tumors arising from the stroma. Seminomas peak when patients are in their thirties, with a smaller peak incidence in the mid-fifties. Successful treatment and remission are common, because of a high sensitivity to chemotherapy and radiation (XRT). There are three major subtypes of seminomas: typical (85%), anaplastic (5–10%), and spermatocytic (4–6%).^{3,4}

A typical seminoma histologically appears multilobular and gray-white, without signs of hemorrhage or necrosis. Microscopically, a typical seminoma presents as sheets of

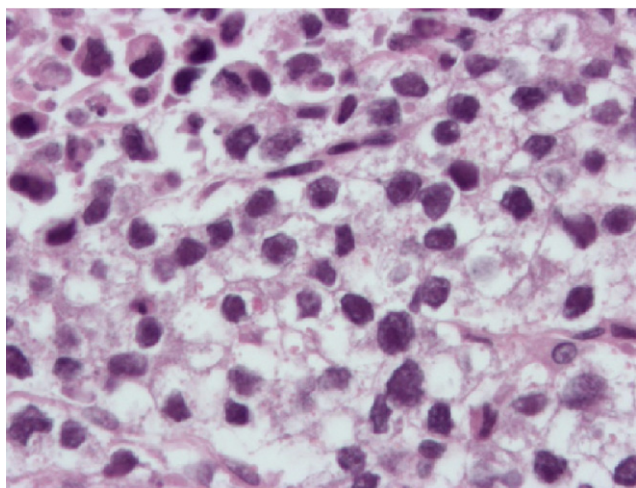


Figure 3 Pathology slide of a typical seminoma.

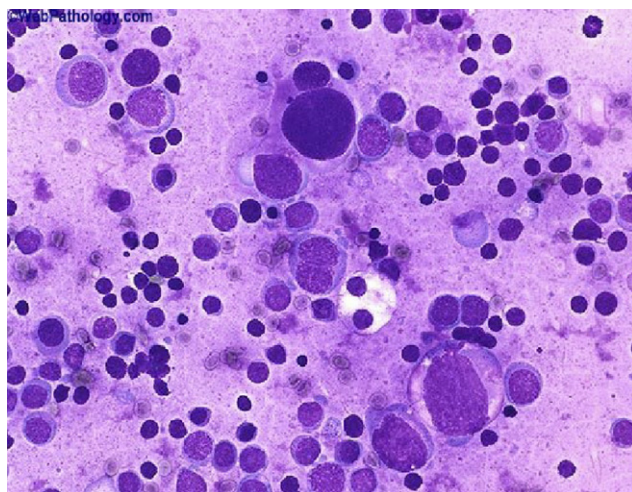


Figure 4 Pathology slide of a spermatocytic seminoma. Photos courtesy Google Images.

uniform cells with inadequately-defined lobules and watery-appearing cytoplasm with one or two nucleoli per cell. Anaplastic seminomas have greater nuclear abnormalities, more mitoses, and more giant cells than that of typical seminomas. Spermatocytic seminomas are considered very uncommon, representing 1 to 2% of all testicular germ cell tumors, and are cytologically similar to non-neoplastic secondary spermatocytes (smaller cells with a narrow rim of eosinophilic cytoplasm) (Figures 3 and 4).^{4,5}

Differential diagnosis

Differential diagnosis of a testicular mass includes epididymitis, testicular torsion, hydrocele, hernia, and carcinoma. Imaging of the scrotum, specifically by US, helps rule out epididymitis, torsion, hydrocele, and hernias. Blood tests for testicular carcinomas include AFP, beta-Hcg, LDH, CEA, and PSA. AFP, beta-Hcg, and CEA are elevated in non-germ cell tumors, whereas LDH is increased in seminomas. High PSA indicates tumors of prostatic origin. Other tests include abdominal and pelvic CT to locate any lymph node or visceral involvement, and biopsy for definitive diagnosis. If there is suspicion of thrombosis, lower extremity Doppler imaging should be done.^{3,4}

Treatment

Management of seminoma is determined by tumor type and stage. Stage I tumors are confined to the testis. They are managed with a combination of radical orchiectomy and active surveillance, XRT, or a single chemotherapy agent. Stage II tumors show paraaortic nodal spread, and are treated with a combination of orchiectomy and either combination chemotherapy or XRT. More advanced disease is

commonly treated with a combination of surgery, XRT, and chemotherapy.^{3,4}

Conclusion

Osteopathic medicine is founded on the principles of disease prevention and health promotion. This case represents a missed opportunity for early education; the outcome of which was a potentially preventable malignancy. Although routine screening and self-testicular exam education are not recommended, males with an undescended testicle represent a higher risk population. For these patients, the physical exam and education are more critical. As family physicians, we have the opportunity to care for our patients throughout their life span. The testicular exam should be part of each well child check. Adult male patients should be encouraged to schedule annual physical exams (preventive visits) including a thorough genital exam. Any abnormalities can be evaluated further with ultrasound or CT as noted above. As the primary provider, we are able to follow the patient to be

certain they understand the importance of physical exam findings, diagnostic imaging, and complete the indicated treatment. Seminoma is a mostly preventable diagnosis when appropriate education and follow up are provided.

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