

Case Report

METASTATIC TESTICULAR TUMOR EXTENDING INTO RIGHT PULMONARY VEIN AND LEFT ATRIUM PRESENTING WITH HEMOPTYSIS AND EXERTIONAL DYSPNEA

*Anith Kumar Mambatta¹, Murali A.¹, Gauri Shankar J.¹, Rajendiran G.² and Premkumar S.³

¹Department of Medicine, PSG Institute of Medical Sciences & Research, Coimbatore, Tamilnadu, India – 641004

²Department of Cardiology, PSG Institute of Medical Sciences & Research, Coimbatore, Tamilnadu, India – 641004

³Department of Surgery, PSG Institute of Medical Sciences & Research, Coimbatore, Tamilnadu, India – 641004

*Author of Correspondence

ABSTRACT

Testicular neoplasms are the most common solid malignancy affecting middle aged men. They usually present with a unilateral testicular swelling and rarely may present with symptoms of systemic metastasis. Of these, intracardiac metastasis is a rare occurrence. Hereby presenting a case with dyspnea and hemoptysis that on evaluation was diagnosed to have testicular cancer with left sided intracardiac and pulmonary vein metastasis. This has not been reported so far in English literature.

Key Words: Cardiac Metastasis, Testicular Mixed Germ Cell Tumor, Hemoptysis

INTRODUCTION

Testicular neoplasms constitutes about 1 percent of all solid tumors in men and is the most common solid malignancy affecting males between the ages of 15 and 35 (Seigel *et al.*, 2011). Approximately one-third of all testicular germ cell tumors (GCTs) are mixed, with two or more germ cell tumor types present within a single mass (Jacobsen *et al.*, 1984). Most of testicular germ cell tumors spread in a predictable progression to the para-aortic lymph nodes, mediastinal nodes and then supraclavicular nodes along the course of the thoracic duct (Wood *et al.*, 1996). The most common site of visceral organ metastasis is pulmonary metastasis. Liver, bone, and brain metastasis are less common (Kondagunta *et al.*, 2007). Metastasis to the heart is rarely reported (May *et al.*, 2006).

We report a case presenting with dyspnea, cough and hemoptysis that on evaluation was diagnosed to have mixed germ cell tumor of testis with metastasis to left atrium, pulmonary vein and right lung. To the best of our knowledge though rare cases of cardiac metastasis especially right atrial involvement have been published earlier this is the first case to be reported with left atrial involvement and hemoptysis.

CASES

29 year old male with no previous co morbid illness came with exertional dyspnea and hemoptysis for 6 months. He also had coughed and weight loss. His vitals were stable. Examination of cardiovascular and respiratory systems was normal. His complete haemogram, renal and liver function tests were normal. Echocardiogram showed right pulmonary vein thrombosis. Computerized tomogram of thorax and abdomen showed a heterogeneous mass in the lower lobe of right lung measuring 4.7×4.6 cm with extension along the right inferior pulmonary vein and into the left atrium (Figure 1A, 1B and 1C). There were multiple small nodular lesions seen bilaterally in the lung.

Detailed examination showed enlarged right testis which was hard and nontender. Ultra sonogram of abdomen and testis revealed an oval well defined intratesticular lesion measuring 1.7 × 2.2 cm in the right testis (Figure 2A). He had elevated alpha feto protein (565 IU/ml), human chorionic gonadotropin (74.96 IU/ml) and lactate dehydrogenase (682 U/L). Right high orchidectomy was done and the biopsy report

Case Report

showed mixed germ cell tumor - embryonal carcinoma, immature teratoma and yolk sac tumor (Figure 2B and 2C). He was referred for chemotherapy to an oncology centre and was lost to follow up.



Figure 1: Computerized tomogram of thorax showing lung metastasis (1A) extending into pulmonary vein (1B) and left atrium (1C)

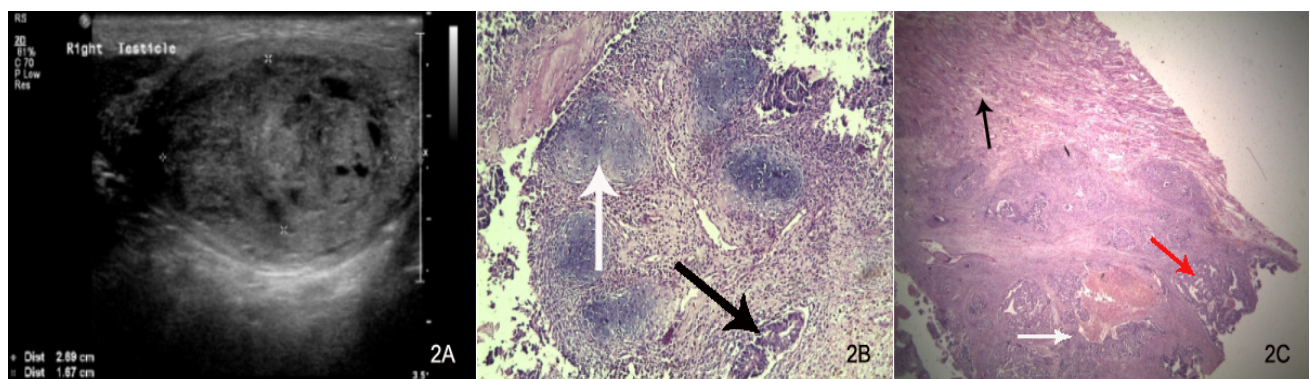


Figure 2A: Ultra sonogram of right testes showing testicular mass

Figure 2B: 10X Hematoxylin and Eosin stain showing lobules of cartilage (white arrow) and embryonal component (black arrow)

Figure 2C: 1.25X Hematoxylin and Eosin stain showing testicular tissue (black arrow), embryonal component (red arrow) and yolk sac (white arrow)

DISCUSSION

Cardiac metastasis of testicular germ cell tumors is extremely rare. Cardiac metastasis is known to occur in 8% of all malignancies in an autopsy study done by Silvestri *et al.*, (1997). Of the malignancies noted to have cardiac metastasis malignant melanomas are the most common followed by other solid malignancies such as lung cancer, breast cancer, soft tissue sarcomas, renal carcinoma, esophageal cancer, hepatocellular carcinoma, and thyroid cancer (Reynen *et al.*, 2004; Mielcarek *et al.*, 2008) cardiac metastasis occurs by haematogenous spread, directly from neighbouring chest tumors or through the pericardial space.

A painless testicular mass is pathognomonic of a primary testicular tumor, occurring in a minority of patients. The majority present with diffuse testicular pain, swelling, hardness, or some combination of these findings (Bosl *et al.*, 1997). The presenting manifestations of testicular cancer are attributable to metastatic disease in approximately 10 percent of patients. Symptoms vary with the site of metastasis:

- Cervical swelling (supraclavicular lymph node metastasis)
- Cough or Breathing Difficulty(pulmonary metastasis)

Case Report

- Anorexia, nausea, vomiting, or gastrointestinal hemorrhage (retro duodenal metastasis)
- Lumbar back pain (bulky retroperitoneal disease involving the psoas muscle or nerve roots)
- Bone pain (skeletal metastasis)
- Central or peripheral nervous system symptoms (cerebral, spinal cord, or peripheral root involvement)
- Lower Limb swelling (iliac or caval venous obstruction or thrombosis).

Gynecomastia is a systemic endocrine manifestation of the disease which occurs in 5% of these neoplasms (Tseng *et al.*, 1985).

Regional metastasis first appears in retroperitoneal lymph nodes below the renal vessels. Left testicular tumors to nodes lateral to the aorta (para-aortic), right testicular tumors usually metastasize to nodes between the aorta and the inferior vena cava (interaortocaval nodes) (Donohue *et al.*, 1982; Ray *et al.*, 1974). Superiorly, the lymphatics empty into the cisterna chyli, sometimes leading to retrocaval and posterior mediastinal adenopathy. Left supraclavicular adenopathy and pulmonary nodules may occur with or without retroperitoneal disease. Liver, bone, or brain is rarely seen as the sole site of metastasis.

An autopsy series of 78 patients who died of testicular cancer showed that most common sites of metastasis are lung, retroperitoneal nodes and liver and mediastinal lymph nodes and so on. Among them, three patients had pericardial metastasis and three had intracardiac metastasis (Wood *et al.*, 1996). In another autopsy series, only two of 154 patients who died of testicular cancer had pericardial metastasis and no intracardiac metastasis was observed (Reynen *et al.*, 2004). Though there has been few case reports of GCTs presenting as cardiac metastasis, most of these have presented with right atrial metastasis (Melvin *et al.*, 1983; Maione *et al.*, 1985; Pillai *et al.*, 1986; Paule *et al.*, 1991). But there have been very rare reports with regards to involvement of the left atrium. Parker *et al.*, (1993), Stein *et al.*, (1994), Cheek *et al.*, (1991) have all reported cases of GCT presenting as left atrial metastasis but most of these cases have presented with chest pain or neurological deficits due to tumor embolism. Avasthi *et al.*, (2008) from India have also reported a case of GCT which was diagnosed to have cardiac metastasis 2 years following orchidectomy. To the best of our knowledge this is the first case of testicular mixed germ cell tumor with left atrial and pulmonary vein metastasis, presenting with hemoptysis and dyspnea. This case is being reported for its rare clinical presentation and an uncommon metastatic spread of a testicular GCT.

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Case Report

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