



## Successful treatment of incidentally diagnosed retroperitoneal seminoma with an primary external Beam radiotherapy.

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### Abstract

**Background:** Germ cell tumours (GCTs) are the most common cancer in young men, typically arising from the testes. However, a small subset (1% to 2%) appears to originate in other locations and is referred to as primary extragonadal germ cell tumors (EGCTs) but origin remains controversial. New thought is that these so called primary retroperitoneal seminomas uniformly represent metastases from an occult or regressed testicular primary tumour.

**Method:** We present case report of retroperitoneal seminoma in a 60 year old male patient who presented with bloody diarrhea. Endoscopic visualization of colon was normal but imaging confirmed incidental finding of a nodal mass in the abdomen. Biopsy report confirmed classic seminoma. A gonadal primary was not seen on testicular ultrasound. Staging imaging and PET did not identify any other sites of disease.

**Conclusion:** Our case confirms the excellent response to radiation as monotherapy in retroperitoneal seminoma with no known primary. In order to understand this rare neoplasm and serve our patients well more emphasis should be on research for developing novel immunohistochemistry and markers

### Introduction

Germ cell tumours (GCTs) in men are the most common neoplasm arising from the testes. However, a small subset (1% to 2%) appear to originate in other locations and are referred to as primary extragonadal germ cell tumors (EGCTs).<sup>1</sup> Those originating in the retroperitoneum represents only 30%–40% of all primary EGCTs.<sup>2</sup> Most EGCTs (83%) are of non-seminomatous histology as reported in the contemporary medical literature.<sup>3</sup> Diagnosis of a primary retroperitoneal EGCT is usually made in later stages as compared to metastatic disease of a testicular origin due to the lack of a distinct, palpable testicular mass which typically triggers a patient to seek medical attention.<sup>4</sup> The most common clinical manifestations of retroperitoneal EGCTs are vague abdominal and back pain. Other less frequent symptoms include weight loss, palpable abdominal mass, fever, dyspnea, and venous thrombosis.<sup>5</sup> EGCT produce a wide variety of symptoms and may reach large volumes if they arise in “silent” areas. We report a rare case of a 60-year-old male diagnosed incidentally on a CT scan with retroperitoneal seminoma with no known primary.

He was treated with curative radical radiotherapy. Case report A 60-year-old male with a previous history of haemorrhoids presented to his primary physician in June 2016 with bloody diarrhoea. He underwent colonoscopy and a computerized tomography (CT) scan of the abdomen and pelvis. The results of the colonoscopy were unremarkable. However, CT scan showed a few borderline enlarged lymph nodes in the retroperitoneum and at least three in the proximal left common iliac region with the largest node measuring up to 20 x 11mm (Figure 1). The nodes were interpreted as borderline enlarged and follow-up CT scan in six months was recommended. Repeat CT scan in January 2017 showed interval enlargement in one of the lymph nodes from 1.5 x 1.6 cm. to 2.2 x 1.8 cm with the other nodes remaining stable (Figure 2). Due to the radiologic progression in one of the nodes, CT-guided core biopsies were obtained. They showed confluent clusters of large cells with vacuolated cytoplasm's and pleomorphic hyperchromatic nuclei with prominent one or more nucleoli. Scattered mitotic figures were seen. A prominent lymphocytic infiltrate was also present in the tissue. With immunohistochemistry, tumor cells were positive for CD117, OCT3/4, and podoplanin (D2-40). They were also negative for S100 protein and CD30. The morphologic and immunophenotypic features were in keeping with seminoma (Figure 3). The overall features, both histomorphologic and immunophenotypic were keeping with metastatic seminoma. On the basis of the biopsy, the patient had bilateral scrotal ultrasound which did not show any discreet testicular mass. The baseline tumor markers included beta HCG less than 1IU/L, LDH normal at 166 and alpha fetoprotein of 4ug/L and his remaining blood tests were completely normal. Physical examination was bone and bowel were excluded from CTV1. A uniform 0.7-cm margin around was provided on PTV1 to the block edge to take beam penumbra into account. This PTV1 received 20Gray in 10fractions, with 200centigray per fraction over two weeks (Figure 5). For the boost or cone down field, a CTV 2 was created around the PET avid nodes. PTV2 with a uniform 0.7-cm margin to CTV 2 to the block edge was created (Figure 6). The organs at risk were charted out as below .The right and left kidney D50% was 8Gy (i.e., no more than 50% of the volume of each kidney should receive 8Gy or higher). The mean dose to the right and left kidneys combined was less than 9Gy .For the boost, the right and left kidney D50% was 2Gy (i.e., no more than 50% of the volume of each kidney should receive 2Gy or higher). This plan was different from typical dog-leg as we treated a Y-shaped radiation field given the fact we had no primary laterality of disease. The patient received a total dose of 36 Gray in 18 fractions (Figure 7). PTV1 and PTV2 coverage doses were equal to 95% and 107% of prescribed doses, respectively. The goal was to cover 100% of PTV1 and PTV2 with 95% of the prescribed dose. During the radiation treatment, the patient did not experience any gastrointestinal symptoms, and his CBC remained constantly normal. A follow up CT abdomen and pelvis was done two months post radiation treatment which showed significant treatment response of the retroperitoneal lymphadenopathy. The largest abdominal lymph node previously measuring 2.4x2.4cm. has reduced in size to 1x1cm. Also, no new retroperitoneal, pelvic or inguinal lymph nodes were identified (Figure 7). Six months post radiation PET scan showed no FDG uptake in the known nodal areas. This represents a complete response to radiation.

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