Unusual renal and colonic mass - description of a rare case

Manika Khare[1], Arvind Ahuja[2], Minakshi Bhardwaj[3]

From [1]Resident, Department of Pathology, [2]Assistant Professor, [3]Professor, PGIMER, Dr RML Hospital, New Delhi, India.

Correspondence to: Dr. Manika Khare, Department of Pathology, 3/293 Malviya Nagar, Jaipur 302017, Rajasthan, India. E-mail: drmanika09@gmail.com.

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ABSTRACT

Seminoma is a germ cell tumor arising from the testis and rarely from mediastinum or other extra-gonadal locations. Seminomas account for 40% of all GCTs. Seminoma can rarely metastasize to kidney and metastasis to the GI tract is least likely with an incidence of less than 1%. It is one of the most treatable and curable cancers, with a survival rate above 95% if discovered in early stages. We are presenting a rare case of metastatic seminoma in a 40-year-old male who presented with a renal and intestinal mass two years after orchidectomy for seminoma which was PLAP negative.

Keywords: *Immunohistochemistry, Rare, Metastatic, Seminoma.*

Seminoma is a germ cell tumor arising from the testis and rarely from mediastinum or other extra-gonadal locations. Seminomas account for 40% of all GCTs [1]. Classic seminoma usually manifests in the fourth or fifth decade. It is localized to the testes (stage I) in approximately 70% of patients and is metastatic to lymph nodes (generally stage II) in 25% [2]. Visceral metastases at presentation can be seen in less than 5% of patients and in general occur, late in the course of the disease.

Seminoma can rarely metastasize to kidney and metastasis to the gastrointestinal tract is least likely with an incidence of less than 1% [3]. It is one of the most treatable and curable cancers, with a survival rate above 95% if discovered in early stages. We are presenting a rare case of metastatic seminoma in a 40-year-old male who presented with a renal and intestinal mass two years after orchidectomy for seminoma.

CASE REPORT

A 40-years-male was admitted to the hospital with chief complaints of swelling in the left flank and abdominal discomfort for 2 years. The swelling was gradually increasing in size and was not associated with fever, hematuria or constipation. The patient was a chronic smoker with 20 pack years. On examination, the vitals were within limits. The general examination was unremarkable and local examination showed a diffuse swelling in the left flank region.

Complete blood count and biochemical investigations were within normal limits.X-ray chest was normal. Ultrasonography (USG) abdomen suggested a left renal mass with tumor emboli in the left renal vein and inferior vena cava lumen. Computed tomography (CT) abdomen showed a left renal mass at a lower pole with complete encasement of the ipsilateral ureter, renal artery, and vein. The tumor was extending medially up to the aorta with mild paravertebral extension at L2 along with extension into the para-aortic lymph nodes and infiltration of the psoas muscle and colon (Fig. 1). Fine needle aspiration cytology (FNAC) was done from outside which showed a single and small groups of atypical cells with an eccentric hyperchromatic nucleus and focally appreciable vacuolated cytoplasm against a hemorrhagic background giving an impression of a malignant tumor or clear cell renal carcinoma.

The patient underwent nephrectomy with adherent segmental colectomy along with left ureteric and para-aortic lymphnodes excision. Grossly, kidney measured 8.5x5x3 cm size with adherent 9.5 cm of the colon. The external surface of the kidney appeared grey-white and encapsulated except for the area where the segment of the intestine was adherent. On serial slices, the renal parenchyma showed a poorly circumscribed firm white nodular lesion towards the lateral surface (Fig. 2). Pelvicalyceal system was dilated with a clot at the hilar area. Two lymph nodes were also identified measuring 3x2x1 cm and 2x1x1 cm. The tumor was also infiltrating into the adherent large intestine. Cut surface of the tumor was homogenous grey-white.

On microscopic examination, multiple sections from the kidney mass showed confluent epithelioid cell granulomas, lymphocytes and giant cells (Fig. 3a). There was prominent fibrohistiocytic proliferation with intervening areas showing singly lying and nests of tumor cells. The cells were showing moderate nuclear pleomorphism, vesicular chromatin, and prominent nucleoli and scant to moderate amount of clear cytoplasm (Fig. 3b). Large areas of necrosis were also noted. The tumor was infiltrating the renal capsule along with tumor deposits in the pelvis. Sections from the adjoining renal parenchyma showed features of chronic tubulointerstitial nephritis. Ten para-aortic lymph nodes were identified out of which 5 showed tumor deposits, however, the

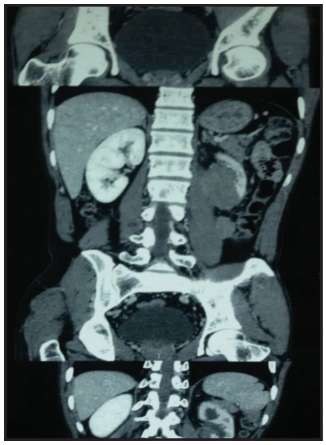

Figure 1: Longitudinal CT image abdomen showing a large irregular shaped, heterogeneously enhancing mass lesion seen in the perinephric and renal capsular region at the lower pole of the left kidney. Mass extending cranio-caudally from the pelvicalyceal region and renal capsule to L3 vertebra level along the course of ureter and causing complete encasement of ipsilateral ureter, renal artery and vein.

ureter was free of tumor. Multiple sections from the large intestine showed infiltration by the tumor with the same morphology from serosa to the submucosa(Fig. 4a). The tumor cells were focal positive for the PAS stain (Fig. 4b).

Based on morphology, a differential diagnosis of clear cell renal carcinoma, lymphoma, and metastatic seminoma were kept and immunohistochemical (IHC) panel including CD10, CK7, EMA, LCA, CD117, PLAP, Pancytokeratin and vimentin was applied. Tumour was diffusely positive for CD117 and focally positive for pancytokeratin (Fig. 5a and 5b) and negative for PLAP, CD10, CK7, EMA, LCA, and vimentin. Based on histomorphology and immunohistochemistry, a final diagnosis of metastatic seminoma with a florid granulomatous reaction in the kidney, colon, and paraaortic lymph nodes was made.

The patient was then interrogated for past surgical history which revealed he underwent left orchidectomy with left-sided hernioplasty two years back at some other hospital. Histopathological examination report showed a diagnosis of seminoma left testis with exuberant granulomatous reaction. The spermatic cord also showed infiltration by the tumor. However, the patient did not receive any therapy after orchidectomy.

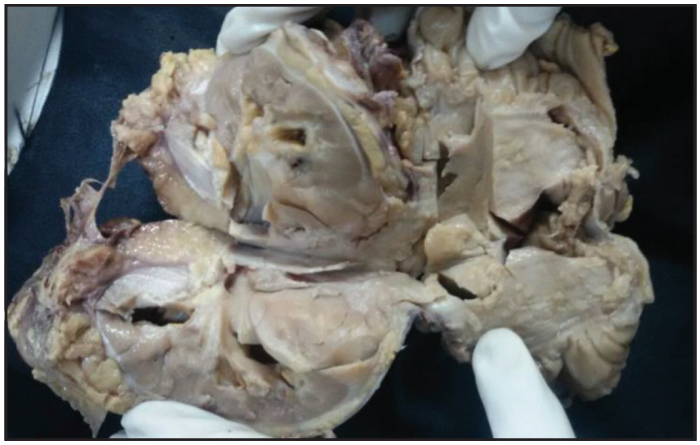

Figure 2: Gross-specimen of the kidney with adherent intestine showing renal parenchyma with a poorly circumscribed firm white nodular lesion.

DISCUSSION

Seminoma accounts for half of all germ cell tumors, whereas non-seminoma germ cell tumors (NSGCTs) account for the remaining half. Metastatic spread of these tumors typically occurs via retroperitoneal lymphatics, and most common sites include retroperitoneal lymph nodes, lungs, liver, brain, and bone [4]. Extra-nodal metastasis of pure seminoma is very uncommon. Metastasis to GItract is even more rare [5,6]. A study done by Chait *et al* included postmortem data and metastases to the GI tractwhich was documented in 25 patients of 487 (5%) with testicular cancer [7]. However, GI tract metastasis by pure seminoma was not documented in this series. In a study by Husband and Bellamy, 20 out of 650 patients (3%)had unusual extranodal metastases in sites such as the kidney, adrenal gland, spleen and stomach at presentation[8]. In a case series by Sweetenham *et al.*, three cases of seminoma metastases to the duodenum and stomach were described [6].

Only a few cases of renal metastasis of seminoma have been reported [9, 10]. Hedley *et al* reported a case ofsolitary seminoma with renal metastasis presenting as an incidental renal mass in a 34-year-old patient [9]. Castelan-Maldonado *et al* reported the case of a 24-years-old male with metastatic seminoma of left kidney, 11 months after the orchidectomy done for seminoma [10].

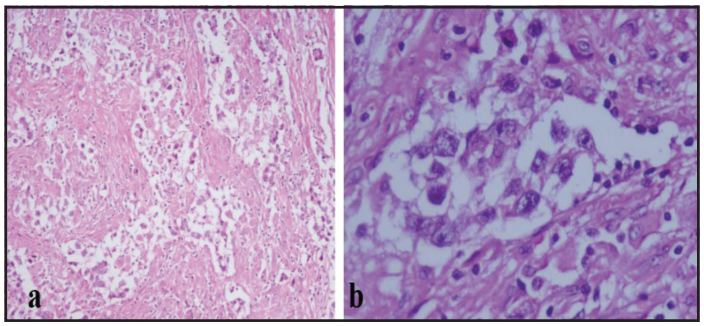

Figure 3: Microscopic examination showing (a) confluent epithelioid cell granulomas, lymphocytes and giant cells along with tumor cells; (b) tumor cells with moderate nuclear pleomorphism, vesicular chromatin, prominent nucleoli and scant to moderate amount of clear cytoplasm.

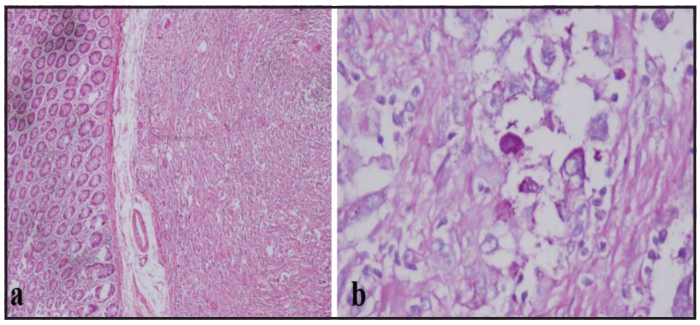

Figure 4: Microscopic examination showing (a) section of intestine with infiltration by the tumor with same morphology from serosa to submucosa; (b) focal PAS positivity in tumor cells.

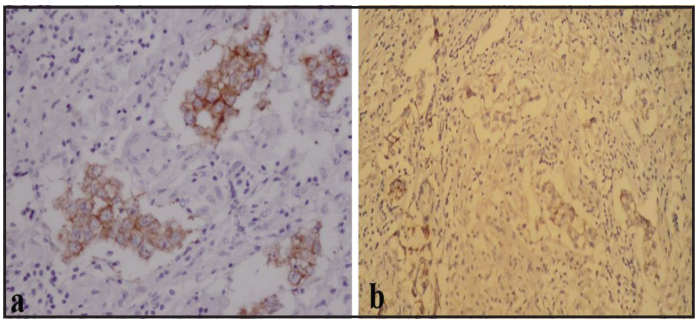

Figure 5: Immunohiostochemical staining showing (a) CD117 positivity and (b) focal PLAP positivity in tumor cells

Similarly,our patient presented with metastasis to kidney and colon 2-years after orchidectomy. Our case in addition, showed an extensive granulomatous reaction at both metastatic sites. Bono *et al* in their case report have also mentioned marked granulomatous reaction with areas of necrosis in metastatic seminoma infiltrating the bone marrow [11].

Although morphology is very characteristic of pure seminoma, however,the help of ancillary techniques like histochemistry and IHC are usually required to reach a definitive diagnosis in cases of metastatic seminoma. Most seminomas contain glycogen and PAS stains are usually positive. Almost all seminomas are positive for CD 117 and OCT3/4 while PLAP positivity is seen in 85 -98% cases. Studies have demonstrated that PLAP is neither a specific nor sensitive marker for seminoma [12,13]. The expression of PLAP may decrease in extragonadal or metastatic seminoma compared to primary seminoma [13].

It is important to diagnose seminoma early because tumor stage is the most important prognostic factor. Other prognostic factors that have been postulated as predictors of outcome include DNA ploidy status, mitotic rate, DNA S-phase percentage, presence of syncytiotrophoblasts, degree of lymphocytic infiltration of the primary tumor, and the expression of β-hCG and low-molecular-weight keratin on IHC. Seminomas are extremely sensitive to radiation and chemotherapy, and these modalities usually incorporated in the treatment following orchiectomy. Cure rates exceeding 95% can be expected for these patients. For metastatic seminoma treatment by platinum-based combined chemotherapy is preferred [14].

The present case was a rare case of pure seminoma with metastasis to the para-aortic lymph node, kidney and colon two years after orchidectomy. There was a striking granulomatous reaction and PLAP stain was negative.

CONCLUSION

To conclude, a proper clinical history along with the histomorphological and immunohistochemical correlation can aid in the definitive diagnosis of metastatic seminoma and negative PLAP staining does not rule it out.

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