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Case Report

Metastatic Seminoma Presenting in Kidney and Cervical Lymph Nodes after a 25-Year Interval: A Case Report and Literature Review

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Keywords

Seminoma · Germ cell tumor · Testicular tumor · Distant metastasis · Case report

Abstract

Introduction: Seminoma comprises approximately 50% of testicular germ cell tumors. Retroperitoneal lymph nodes are the most common initial metastatic sites but renal metastases are infrequent and the majority of renal tumors represent primary neoplasm. ***Case Presentation:*** In this study, we present a 48-year-old male with metastases of seminoma to the cervical lymph nodes and kidney after a 25-year interval. ***Conclusion:*** This presentation emphasizes the necessity of advising all patients who are discharged from follow-up that there is a chance of late remote relapse and that if they acquire any illness after discharge, they must inform their doctor about their previous seminoma.

Introduction

Germ cell tumors are the most common type of testicular cancer [1]. The most typical symptom of testicular cancer is a painless lesion in the testis. Less frequent symptoms include gynecomastia and testicular pain [2]. Males between the ages of 15 and 35 are most frequently affected by testicular malignancies, which make up 1% of all cancer cases in men [3]. Seminomas and nonseminomas are the two types of testicular germ cell cancers. More than half of diagnoses for germ cell cancers are seminoma [4].

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Although only a small percentage of seminoma patients have distant metastases at diagnosis, lung, bone, liver, and retroperitoneal lymph nodes are among the organs where seminomas frequently metastasize [5, 6]. The majority of kidney malignancies are primary neoplasms. Secondary kidney tumors are relatively uncommon in clinical practice [7, 8].

In this study, we report the clinicopathological, radiological, and immunohistochemical findings of a case of seminoma metastasis to the kidney and cervical lymph node after 25 years of interval. The CARE checklist was followed in this article. In an online supplementary file, titles were mentioned (for all online suppl. material, see https://doi.org/10.1159/000532026).

Case Report

Patient Information

A 48-year-old man who was previously diagnosed with a seminoma 25 years earlier visited an otorhinolaryngologist with a history of hoarseness, resistance to treatment headache, dysphagia to solids, odynophagia, hearing loss, and tinnitus of the right ear all started 1 month before admitting to hospital. The patient had a history of left orchiectomy, and adjuvant chemotherapy 25 years ago. Over the course of 2 months, the patient underwent four cycles of chemotherapy with bleomycin, etoposide, and cisplatin. The tumor had gone into complete remission after the therapies and during these years the patient did not experience any related complaints. Before the pathologic examination was completed, the patient and his family did not inform the healthcare professionals about his previous history.

Clinical Findings and Diagnostic Assessment

After undergoing multidetector computed tomography and magnetic resonance imaging, the patient showed some mass-like lesions at the base of the skull and in the right cervical region that also included lymph nodes. Prior to a pathologic examination, radiologic findings pointed to several potential diagnoses, such as lymphoma or kidney-originated tumors that had metastasis to the base of the skull and neck (shown in Fig. 1, 2).

A computed tomography scan revealed a 30 × 26 mm ellipsoid, hypodense mass in the lower pole of the left kidney. Yet, no images of this imaging technique are available. Initial tumor markers including AFP, B-HCG, and LDH were all negative.

Histologic and immunohistologic findings include the following:

Pathology laboratory guidelines recommend storing and archiving paraffin blocks and slides for a minimum of 20 and 10 years, respectively [9]. As a result, the laboratory's initial data on seminoma from 25 years ago was unavailable.

Histology showed complete manifestations of seminoma in both metastatic sites, but the skull sample was unsuitable for imaging due to higher necrosis and crashing; therefore, the kidney sample was selected for presenting this morphology due to its better quality. However, morphologically, they both exhibit the same pattern and are identical to a classic seminoma.

The neoplastic proliferation of malignant tumoral cells is visible as a diffuse pattern in the left kidney mass core needle biopsy (shown in Fig. 3a, b). These cells range in size from medium to large, with a high N/C ratio, pale to eosinophilic cytoplasm, and hyperchromic nuclei that are rounded.

A mass incisional biopsy of the right skull base reveals a broad pattern of medium to large cells with neoplastic growth. These cells exhibit pleomorphism, high mitotic rate, high N/C ratio, and crashing.

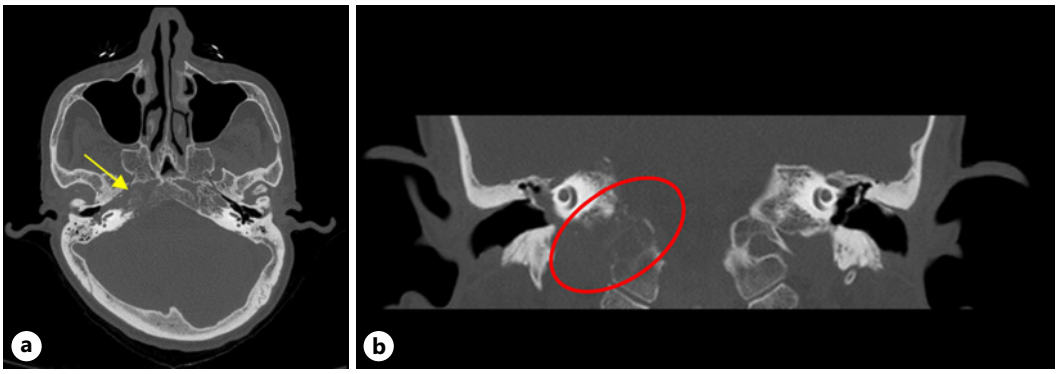

Fig. 1. Temporal bone high-resolution CT scan, bone window. **a** Axial view shows a lytic destructive lesion in the right petrous apex and right side of clivus invading the ipsilateral carotid canal (yellow arrow). **b** In coronal view, there is an extension of bony changes to the right side jugular frogmen (red circle) and right side of the C1 vertebra.

It needs to be mentioned that, in contrast to our case, the histological appearance in some metastatic situations is out of the ordinary [10]. The same immunohistochemistry was performed on two metastatic locations. PLAP, CD117, CD10, Ki67, and OCT IHC staining are all positive in renal tumor cells (Fig. 3c) and skull tumor cells. In contrast to vimentin, which was exclusively positive in renal cells, CK was only dot-like positive in skull cells.

Therapeutic Intervention

The patient underwent surgery of canal-wall-down and a complete radial mastoidectomy was done. Canal wall was drilled completely up to the facial ridge and middle ear mass was removed. The patient was offered chemotherapy, but his condition rapidly deteriorated, and he died before he could receive it.

Follow-Up and Outcomes

Unfortunately, the patient passed away 1 month after receiving a diagnosis of metastatic seminoma. The cause of his death was metastatic invasion to the brain since the skull tumor rapidly progressed to the intracranial, and the patient died as a result of the effects of these invasions.

Discussion

Males between the ages of 15 and 35 most frequently develop testicular tumors, which have an improving rate of complete recovery [3]. Seminoma usually spreads metastatically along the lymphatic drainage routes to the retroperitoneal lymph nodes; however, involvement of the kidney, adrenal gland, psoas muscle, stomach, seminal vesicle, bladder, prostate, and pericardium is rarely present (<1%) [11].

In the research presented by the husband and colleagues on 650 patients with testicular cancers who underwent computed tomography, only 6 patients had kidney metastases, two of which were seminomas. This study indicates the infrequent occurrence of renal seminoma metastases [12].

Castelán-Maldonado et al. [8] describe a case of a 24-year-old man who underwent a left radical orchiectomy as a result of classic seminoma, left renal metastases from seminoma were also discovered in this instance. Despite this case, the renal metastasis in our patient occurred 25 years after the initial seminoma presentation.

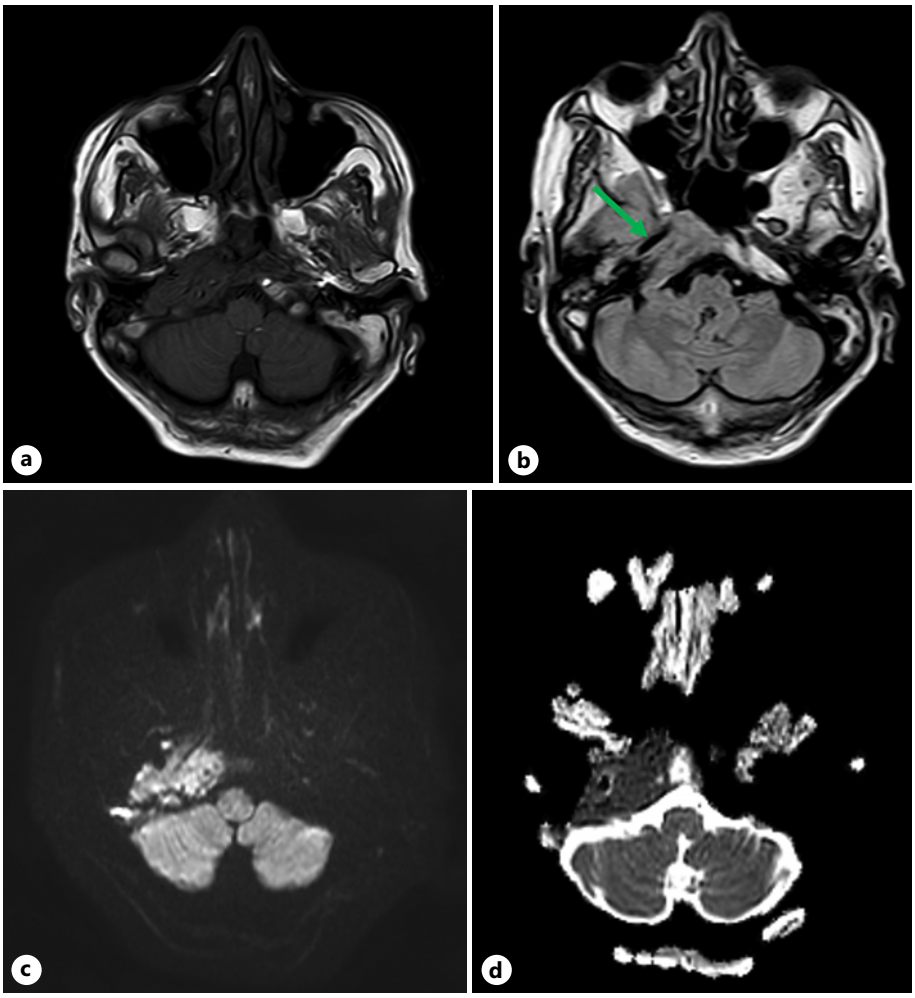

Fig. 2. Brain MRI axial images: T1 weighted (**a**), FLAIR (**b**), diffusion-weighted sequences (**c**), and apparent diffusion coefficient (ADC) (**d**) map reveal extensive signal changes of the right petrous apex, encasing ipsilateral carotid artery (green arrow in **b**), with diffusion restriction.

Malignant tumors are the most frequent cause of neck masses in adults, and neck involvement may frequently be the first or only clinical symptom [13] and neck metastases from uterine, ovarian, prostate, and testicular malignancies have been described seldom. Supraclavicular metastases can develop in men as their prostate and testicular cancers progress [14].

Considering that, 4.5–15% of patients with testicular cancer may experience neck metastases during the course of the disease, the neoplastic diffusion to the cervical lymph node is not an unusual presentation of the disease [15]. A 59-year-old man who presented with a left indolent neck swelling that had developed gradually over 6 months is the focus of a case study by Corazzi and colleagues. [13]. The clinical history of the patient revealed a left testicular seminoma that had undergone surgery and adjuvant treatment 20 years ago.

For testis tumors, metastases during the first 2 years are considered as early, whereas those after 5 years are categorized as late. The majority of metastases occur within the first 2 years [16].

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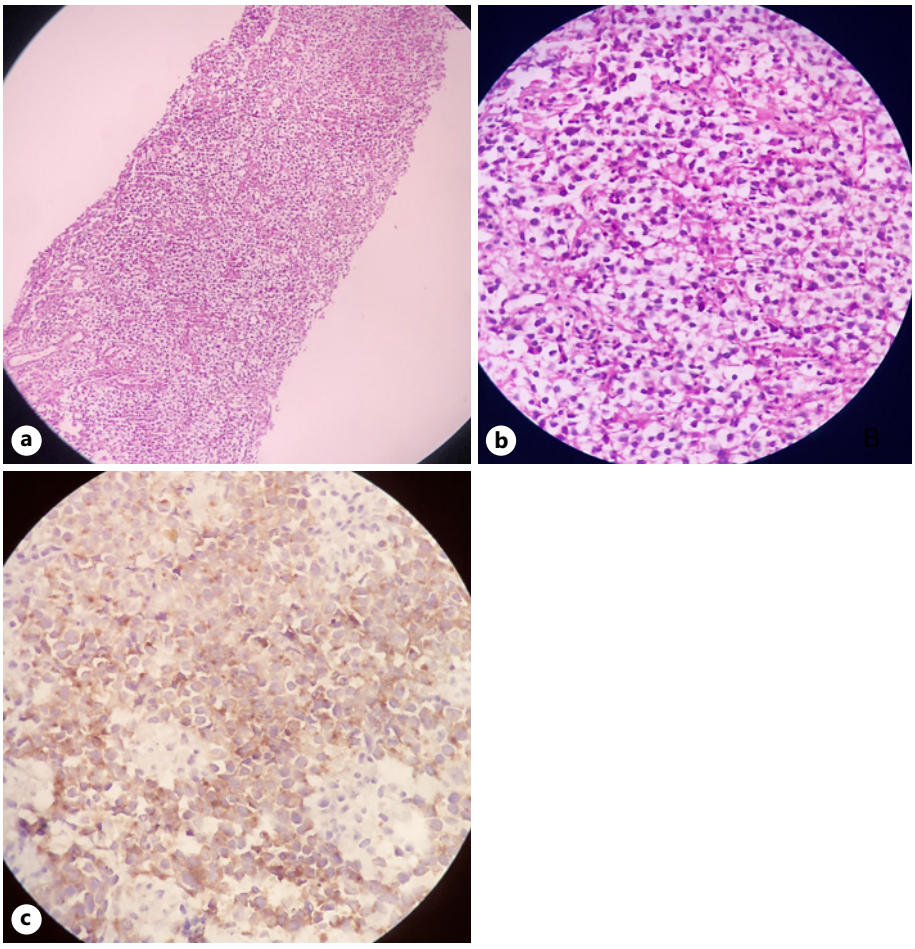

Fig. 3. Renal core needle biopsy. Renal tissue is completely replaced by tumoral cells, composed of neoplastic germ cells with clear cytoplasm and large nuclei. Hematoxylin & eosin staining (**a**), *100 (**b**), *400 (**c**). Immunohistochemistry for PLAP antibody shows positive cytoplasmic staining in tumoral cells.

Table 1 shows 15 instances of seminoma metastases that occurred very late (10 years or later). The median age was 56.1 and cases ranged from 35 to 73 years old, with one case being undefined. Patients experienced metastases at a median interval of 20.25 years (range: 10–43) following initial treatment. Testis was affected unilaterally in 12 cases (left testis in 7 cases, right testis in 5 cases) and bilaterally in 3 cases.

All 15 cases had an orchiectomy, in addition to the orchiectomy, 3 cases received chemotherapy and 7 cases received radiotherapy. The most commonly afflicted sites of metastasis were lung in three cases, mediastinum, liver, bladder, sigmoid, and retroperitoneum in two cases, neck, pancreas, testicular vein, prostate, pelvic lymph node, chest wall, pleura, and inguinal lymph node in one case.

In 12 cases, chemotherapy was used as the primary treatment for metastatic seminoma, 9 cases underwent resection and 3 cases received radiotherapy. One case had unclear management. Four people died despite therapy, whereas 10 patients had favorable results.

In the present study, we discussed an exceedingly rare instance of late seminoma metastasis that simultaneously affected the kidney and neck that occurred 25 years after orchiectomy and chemotherapy. Unfortunately, the patient died 1 month after diagnosis.

The patient was initially admitted to the hospital with a history of hoarseness, headache, dysphagia, odynophagia, and hearing loss with no doubt associated with previous seminoma.

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Table 1. Late seminoma metastases cases

Author	Age	Interval	Site/stage seminoma	Seminoma management	Metastasis site	Metastasis management	Follow-up
Fukushima et al. [17], 2019	56	13	Left testicle Stage I	Orchiectomy	Mediastinum	None	Died
Türkoğlu et al. [18], 2015	45	10	Right testicle Stage IA	Orchiectomy Chemotherapy	Bladder	Resection chemotherapy	Successful treatment
Corazzi et al. [13], 2020	59	20	Left testis	Orchiectomy Chemotherapy	Neck	Chemotherapy	Successful treatment
Mukhtar et al. [19], 2011	64	43	Right testis	Orchiectomy Radiotherapy	Pancreas Lung Liver	Chemotherapy	Died
Strohmeyer et al. [20], 1992	Not mentioned	30	Right testis (6 years later left testis)	Orchiectomy Radiotherapy	Sigmoid Left testicular vein Lung	Chemotherapy Resection	Died
Salemis et al. [21], 2018	40	12	Left testicle	Orchiectomy Chemotherapy	Sigmoid	Sigmoidectomy Chemotherapy	Successful treatment
Yamashita et al. [22], 2005	63	18	Left testicle	Orchiectomy Radiotherapy	Left inguinal lymph nodes	Lymphoidectomy	No data
Washino et al. [23], 2017	58	10	Left testicle stage IA	Orchiectomy	Bladder	Chemotherapy Cystectomy	Successful treatment
Baweja et al. [24], 2020	60	20	Right testicle Stage I	Orchiectomy Radiotherapy	Prostate	Chemotherapy	Successful treatment

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Table 1 (continued)

Author	Age	Interval	Site/stage seminoma	Seminoma management	Metastasis site	Metastasis management	Follow-up
Swinney et al. [25], 2021	73	30	Right testicle Stage I	Orchiectomy Radiotherapy	Pelvic lymph node	Resection chemotherapy Radiotherapy	Successful treatment
Crocetti et al. [26], 2021	67	23	Bilateral Stage I	Orchiectomy Radiotherapy	Retroperitoneum	Chemotherapy	Successful treatment
Tavolini et al. [27], 2008	41	12	Left testicle Stage I	Orchiectomy Radiotherapy	Chest wall Pleura	Chemotherapy Radiotherapy Resection	Died
Blanke et al. [28], 1997	68	21 32	Left testicle	Orchiectomy	Retroperitoneum (21 years later) Lung hilum (32 years later)	Resection Radiotherapy	Successful treatment
Brown et al. [29], 2001	35	12	Right testicle	Orchiectomy	Mediastinum	Chemotherapy	Successful treatment
Ng et al. [30], 2010	57	18	Bilateral Stage I	Orchiectomy	Liver	Chemotherapy Resection	Successful treatment

Particularly in young patients with a history of testicular cancer, the likelihood of late metastases should be strongly considered. A very late relapse of testicular germ cell tumors occurred with a 1% annual chance of recurrence between 5 and 10 years [31]. Healthcare systems are unable to continue lifelong follow-up to detect such a low rate of relapses. It would be preferable to alert all patients who are discharged from follow-up that there is a potential risk of late remote relapse and if they develop any illness after discharge, they should inform their doctor about their previous seminoma.

Our review of the literature found no other cases with classic-type seminoma that had spread to the neck and kidney (both are uncommon sites for testicular metastases) 25 years later without having additionally spread to the retroperitoneal region (the most prevalent site of involvement).

Conclusion

In the natural history of testicular malignancies, late neck lymph node and renal metastasis are uncommon. In cases of positive clinical data, cancers of remote sites should always be considered, especially in the differential diagnosis of neck adenopathies with unknown etiology, even many years after the primary treatment.

Key Clinical Message

The current study focuses on late and remote seminoma metastasis. Patients should also be informed about the possibility of a late relapse, even many years after a successful course of treatment, and if they acquire any illness after discharge, they need to inform their doctor about their past seminoma.

Acknowledgments

We wish to thank in particular the patient for his collaboration.

Statement of Ethics

Ethical approval for the study was obtained from Ethics Committee of Isfahan University of Medical Science on May 2023. Written informed consent was obtained from the patient for publication of this case report and any accompanying images on April 2022 2 weeks before his death. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

Conflict of Interest Statement

The authors declare that they have no competing interests.

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Author Contributions

Sohrabi contributed to data acquisition and prepared the manuscript. Hajiahmadi collected radiologic findings. Naimi prepared pathologic findings and supervised the study. Each author participated sufficiently in the work to take responsibility for appropriate portions of the content. All authors read and approved the final manuscript.

Data Availability Statement

All data generated during this study are included in this article. Further inquiries can be directed to the corresponding author.

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