An Exceedingly Rare Case of Bilateral Synchronous Germ Cell Testicular Tumors of Different Histological Types

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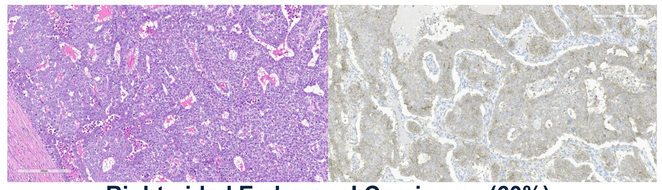
Introduction

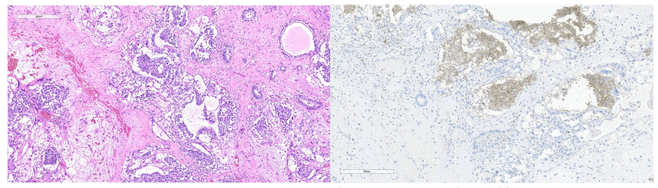
- Testicular cancer is the most prevalent solid malignancy affecting men aged 15 to 35 years. In the United States, the estimated incidence of testicular cancer is 6 cases per 100,000 men per year[1]. Bilateral synchronous testicular tumors are observed in approximately 2-3% of cases, most metachronous[1]. Bilateral synchronous testicular tumors account for 10% of bilateral tumors, and typically show similar histological patterns in both testes, with bilateral seminoma being the most common type of presentation[2]. However, discordant histological patterns in bilateral testicular tumors are extremely rare, with fewer than 100 cases reported in the literature[2-8]. In this report, we describe an additional case of synchronous primary bilateral testicular tumors, each with distinct histopathology. Because of the rarity of synchronous bilateral testicular neoplasm, treatment is unique and based on the tumor stage and managed separately with close surveillance in accordance with National Comprehensive Cancer Network (NCCN) guidelines.

Case Description

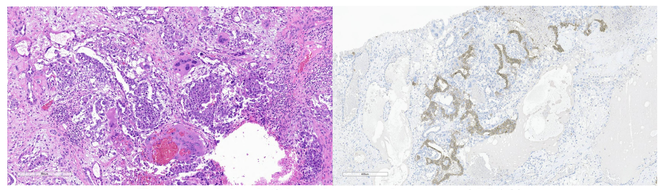
- A 43-year-old man with no significant past medical history presented to a primary care physician with increasing right testicular pain and swelling. A testicular sonogram showed a large right-sided testicular mass and a 1.7 cm left-sided testicular mass, both suspicious of malignancy.
- Pre-surgical laboratories: PSA 0.97, AFP 1875, hCG 2508, LDH 448. Patient proceeded with a right inguinal orchiectomy with biopsy which revealed mixed germ cell tumor (60% embryonal carcinoma, 30% yolk sac tumor, 10% choriocarcinoma) with clear margins, no invasion, stage IS (pT1b N0 M0).
- Subsequent left inguinal orchiectomy with biopsy was performed, which demonstrated complete seminoma without any invasion with clear margins, stage IA (pT1a N0 M0).
- Post-surgery, the tumor markers normalized. CT A/P and Chest X-ray showed no evidence of lymphadenopathy or metastatic disease.



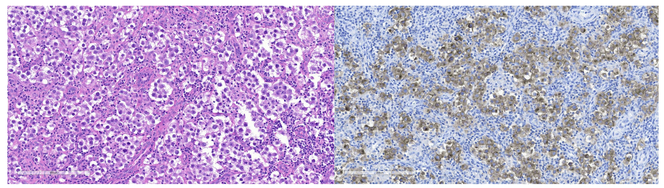
Right-sided Embryonal Carcinoma (60%)
H&E and CD30 immunohistochemical stain



Right-sided Yolk Sac tumor (30%)
H&E and CD30 immunohistochemical stain



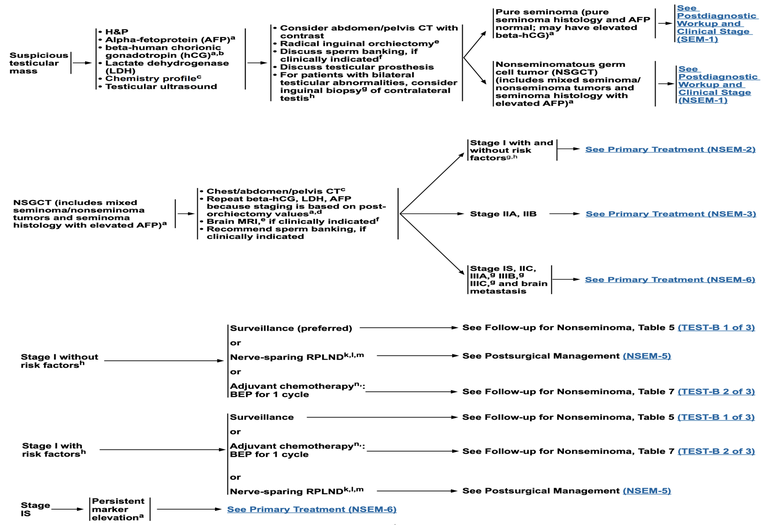
Right-sided Choriocarcinoma (10%)
H&E and CD30 immunohistochemical stain



Left-sided Seminoma (100%)
H&E and CD117 immunohistochemical stain

Discussion

- It is now widely recognized that bilateral synchronous tumors of different histology typically arise from the development of two separate primary tumors, rather than originating from metastasis from one testis to another.
- The treatment of synchronous germ cell testicular tumors (TGCT) depends on several factors, including the stage and histology of the tumors, the patient's overall health, and their preferences, and follow NCCN guidelines as follow:



	Year (at month intervals)				
	1	2	3	4	5
H&P and markers[b]	Every 2 mo	Every 3 mo	Every 4–6 mo	Every 6 mo	Annually
Abdomen ± Pelvis CT[c,d]	Every 4–6 mo	Every 6 mo	Annually	As clinically indicated	
Chest x-ray[e]	At mo 4 and 12	Annually	Annually	Annually	As clinically indicated

Conclusion

- Bilateral primary synchronous testicular germ cell tumors (TGCT) typically present with identical histology in each tumor. Our patient presented with a case of primary synchronous bilateral testicular cancer with discordant histology in each testis, which likely arose from two separate primary tumors. Despite the rarity of this condition, its treatment mirrors standard management of unilateral testicular carcinoma, with the added element of prioritization of the more malignant component of the tumors[9] and following NCCN guidelines.

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