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# Divergent Outcomes In Mediastinal Seminoma And Nonseminomatous Germ Cell Tumors: A Real-World Experience

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**INTRODUCTION**

Primary mediastinal germ cell tumors (PMGCTs) are rare neoplasms, accounting for approximately 15% of mediastinal tumors and 1–3% of all germ cell tumors (GCTs). Although they share histopathological features with testicular GCTs, PMGCTs exhibit distinct tumor biology, treatment response, and prognosis. Given the limited Indian data, we evaluated the clinicopathological characteristics, treatment patterns, and survival outcomes of patients with PMGCT.

**METHODS**

This retrospective single-center study included patients with PMGCT treated between January 2011 and December 2021. Following Institutional Ethics Committee approval, demographic, clinicopathological, treatment, and survival data were retrieved from medical records. Progression-free survival (PFS) and overall survival (OS) were estimated using the Kaplan–Meier method.

**RESULTS**

Among 95 male patients with GCT, 25 (26%) had PMGCT. The median age was 26 (13–40) years. 56% had an ECOG performance status ≥3 and superior vena cava syndrome was the presenting manifestation in 9 (36%) patients. Seminomatous and nonseminomatous PMGCT accounted for 10 (40%) and 15 (60%) cases, respectively.

Among seminomas, 9 (90%) were classified as IGCCCG good-risk and 1 (10%) as intermediate-risk. First-line chemotherapy consisted of bleomycin, etoposide, and cisplatin (BEP) in 50% and etoposide, ifosfamide, and cisplatin (VIP) in 30%, with 30% achieving a partial response.

All nonseminomatous PMGCTs were classified as IGCCCG poor-risk. Mixed GCT was the commonest histology (40%), followed by teratoma (30%) and yolk sac tumor (25%). BEP and VIP were administered in 70% and 30% of patients, respectively; 67% achieved a partial response, while 25% had progressive disease.

Kaplan–Meier analysis demonstrated significantly superior outcomes in seminomatous PMGCT, with a 5-year PFS of 100% versus a median PFS of 11 months (log-rank *p*=0.008) and a 5-year OS of 100% versus 52% for nonseminomatous PMGCT (log-rank *p*=0.028). Peripheral neuropathy occurred in 32% of patients, fertility-related complications in 8%, and one patient developed bleomycin-induced pulmonary toxicity.

**CONCLUSION**

PMGCT is a rarer entity comprising nonseminomatous histology predominantly. Primary mediastinal seminomas demonstrate excellent long-term survival, whereas nonseminomatous PMGCTs remain associated with advanced presentation and poor outcomes despite multimodality treatment. These findings reinforce the distinct clinical behaviour of PMGCT subtypes and highlight the need for improved risk-adapted and novel therapeutic strategies for nonseminomatous disease.