

Real-World Outcomes of Testicular Germ Cell Tumors in Pakistan: A Retrospective Study from A Tertiary Care Center

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Background: Testicular germ cell tumors (GCTs) are rare, but they persist as the most common malignancy in males aged between 15 and 44 years. Most of the testicular tumors are gonadal; a small portion are extra-gonadal. The testicular GCTs susceptible to platinum-based chemotherapy are considered to be the most curable ones in early-stage disease and even in advanced disease. The data on outcomes, influence of clinical factors, histologic subtypes, prognosis, and serum markers (AFP, β HCG, LDH), remain scarce in Pakistan, prompting the basis of the present study.

Methods: This was a retrospective observational study. The Patients above 18 years with a histopathological diagnosis of GCT from 2020 to 2024 were included. The patient demographics, tumor histology, location, stage, tumor markers, and treatment details were recorded. Survival outcomes were analyzed using Kaplan-Meier curves. Cox proportional hazards regression was used to identify independent prognostic factors.

Results: A total of 73 male patients were included. The mean age was 33 years. Seminoma was the most common tumor type (49.3%). The majority of tumors were of gonadal origin (91.8%) and good-risk (67.1%). BEP was the predominant chemotherapy regimen (49.3%), and orchidectomy was done in 78.1%. Recurrence or progression occurred in 15.1% of the patients. The mean PFS was 58 months (95% CI: 55.7–83.1 months) and the mean OS was 58.76 months (95% CI: 54.39–63.13 months). The median OS could not be estimated as more than half of the cohort remained alive at the end of the study period. On univariate analysis, elevated post-

orchidectomy tumor markers were associated with inferior PFS (HR 4.17, 95% CI 1.59–10.95, $p = 0.004$) and OS (HR 2.70, 95% CI 1.34–5.44, $p = 0.006$). Risk stratification was significantly associated with OS (HR 2.53, 95% CI 1.06–6.05, $p = 0.037$).

Conclusion: GCTs at our institute demonstrated favorable long-term outcomes consistent with the established high curability of these tumors. Post-orchidectomy tumor markers emerged as the most important prognostic factor, underscoring their clinical utility in risk assessment. These findings provide a valuable baseline for GCT outcomes in Pakistan and help improve prognostic and management strategies in LMICs.