IUC26687-94

Clinical and Pathologic Outcomes of Resection of Thoracic Residual Masses in Germ Cell Tumors

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Background

Germ cell tumors (GCTs) may involve the lungs and/or mediastinal lymph nodes as metastases from Primary Testicular or Primary Mediastinal GCTs (PT-GCTs, PM-GCTs), with different prognosis. After cytoreductive chemotherapy, thoracic residual masses >1 cm are usually resected whenever feasible. Post-surgical management remains uncertain, especially when viable tumor is detected at histopathology examination.

Methods

We retrospectively reviewed 39 male pts who underwent resection of residual disease in the lungs and/or mediastinum after systemic chemotherapy for GCT at a single tertiary referral center. Observation time was restricted to 36 months in order to account for heterogeneous follow-up time in the two groups.

Results

Twenty-six pts had metastatic PT-GCTs (66.6%) and 13 PM-GCTs (33.3%). All PT-GCTs had non-seminoma histology, whereas PM-GCT group had one seminoma pt. PM-GCT pts were younger and showed a prevalence of IGCCCG poor risk score compared to PT-GCT pts (Tab 1).

Thoracoscopic resection was more frequent in PT-GCTs (20/26, 77%) than in PM-GCTs (1/13, 8%), whereas open procedures predominated in PM-GCTs (12/13, 92%), and consisted mainly in sternotomy (6/13, 46%) (Fig 1). Necrosis/fibrosis, teratoma and viable tumor were found in 30.7%, 42.3% and 27.0% of PT-GCTs versus 23.1%, 15.4% and 61.5% of PM-GCTs, respectively (Fig 2). PM-GCTs showed inferior survival compared with PT-GCTs, with 36-month OS of 61.5% versus 92.1% (log-rank p=0.019); the difference in PFS at 36 months was also significant (88.3% vs 61.5%, log-rank p=0.048) (Fig 3).

In multivariable analyses, viable tumor in the resected specimen independently predicted both inferior OS (HR 11.60, 95% CI 1.15–116.49; p=0.037) and PFS (HR 10.06, 95% CI 1.13–89.79; p=0.039).

Characteristics	PT-GCT (n=26)	PM-GCT (n=13)
Median age at metastatic disease, years (range)	32 (16–58)	23 (20–56)
Median age at surgery, years	33	24
Median follow-up, months	87.6	37.2
Primary tumor histology		
Seminoma	0 (0%)	1 (7.7%)
Non-seminoma	26 (100%)	12 (92.3%)
Performance status (ECOG)		
0	23 (88.5%)	10 (76.9%)
1	3 (11.5%)	3 (23.1%)
IGCCCG risk		
Good	12 (46.1%)	1 (7.7%)
Intermediate	12 (46.1%)	0 (0%)
Poor	2 (7.8%)	12 (92.3%)
Cytoreductive chemotherapy		
1 line (PEB)	22 (84.6%)	8 (61.5%)
2 lines (TIP, PEI or TPG)	4 (15.4%)	5 (38.5%)

Table 1. *Patient characteristics.*

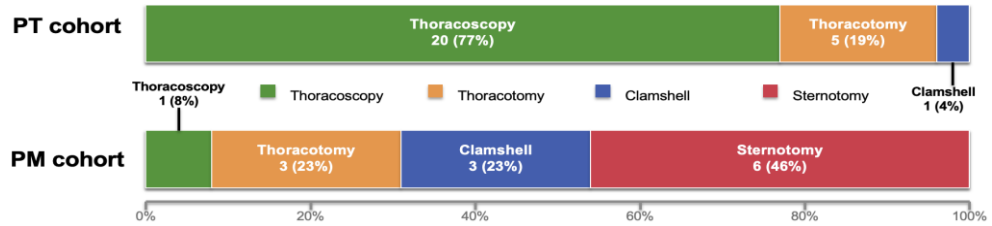

Figure 1. *Surgical approaches for thoracic surgery, by cohort.*

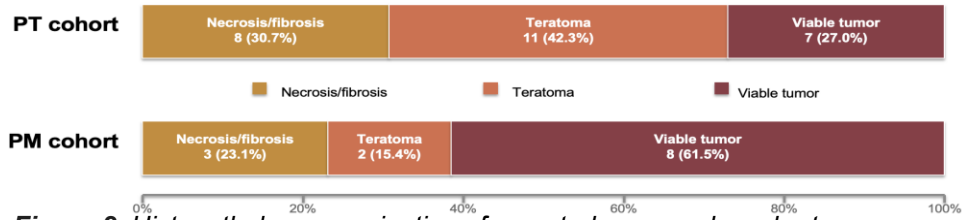

Figure 2. *Histopathology examination of resected masses, by cohort.*

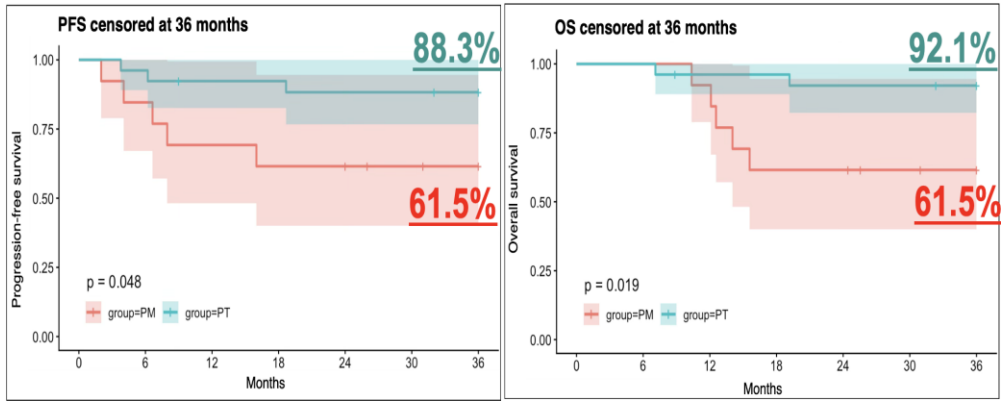

Figure 3. *Kaplan–Meier estimates of 36-month PFS and OS by cohort.*

Conclusions

Viable tumor in resected masses identifies pts at higher risk for early progression and shorter survival, particularly within the first three years. Primary mediastinal site also correlates with poorer outcomes. Resection of residual thoracic masses provides clinically relevant prognostic information that may improve post-surgical risk stratification and support tailored postoperative management, including treatment intensification with high dose chemotherapy and autologous stem cell transplantation.

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