Methods: This multi-institutional study pooled data of patients who died due to GCT from three academic, high-volume adult GCT referral centres (Dana-Farber Cancer Institute, Memorial Sloan Kettering Cancer Center, Indiana University) between 1997 and 2017. Additionally, we collected data of paediatric and adolescent GCT patients treated on clinical trials in the US, UK, Europe and South America from the MaGIC group. Site, stage, risk, histology, primary therapies and relapse data (including relapse histology, metastatic burden, salvage and palliative therapies) were collected, in addition to detailed cause of death.
Results: Data from approximately 900 patients (adult and paediatric) who died of GCT have been collated and currently undergoing analysis. First results will be presented at the International Extracranial Germ Cell Tumour Conference, Cambridge, 2019.

GCT-73 The features and management of late relapse of nonseminomatous germ cell tumours: The Royal Marsden Experience

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Background: Late-relapses (LR) of non-seminomatous germ-cell-tumours (NSGCT), (i.e. after disease-free-interval of ≥2 years), are increasingly recognised. We reviewed the features of LR in NSGCT within a tertiary referral testicular cancer service.
Methods: 3,064 patients were referred to the testis multi-disciplinary-team (January 2005 to Dec 2017). Patients who experienced LR where initial pathology demonstrated NSGCT were identified. Data from original and late presentation and management was reviewed.

Initial stage	n	Time to recurrence (Months) Median (95%CI)	Management at relapse		
			Surgery alone	Primary Chemo ±(surgery)	other
Stage 1	31	55 (48–108)	14	17 (9)	0
Stage 2	29	120 (84–192)	25	4(0)	0
Stage 3	41		30	8 (4)	3

Results: Of the 3,064 patients, 101 (3.3%) had LR, with 43 (43%) relapsing >10 years. 36 were symptomatic and 39 had raised markers (AFP 29, HCG 9, both 1). Table shows stage at initial presentation and time-to-relapse. 13 CS1 patients had received prior chemotherapy (8 adjuvant and 5 for early relapse). 59/60 CS2/3 patients received chemotherapy as primary treatment and 41 had post-chemotherapy retroperitoneal-lymph-node-dissection (PC-RPLND (bilateral template in 12). 20 of these 41 men who had a PC-RPLND experienced retroperitoneal LR (6 after bilateral template). Patient management at relapse – see Table. Time-to-recurrence was longer in CS2/3 patients ($p < 0.001$). 84 surgical procedures – histology was teratoma-differentiated in 44, yolk-sac 14, de-differentiated in 7 and viable GCT in 11, benign 8. To date, 22/101 (20 from NSGCT) patients have died, 13 of these patients relapsed at multiple sites. Men with symptomatic disease (13/36, 33%) and receiving chemotherapy and no surgery (10/17, 59%) tended to have worse survival. LR of NSGCT frequently occurs after an extended interval and typically occurs earlier in CS1 disease compared with higher stages. Aggressive surgery±chemotherapy can cure most patients.

GCT-74 Gene expression studies in platinum-resistant testicular germ cell tumours

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Background: Although testicular germ cell tumours (TGCT) are mostly curable using cisplatin-based chemotherapy, a small subset are platinum-resistant and have poor prognosis. To better understand platinum-resistance, we conducted gene expression studies using a case-control cohort of platinum-resistant and platinum-sensitive TGCT, comparing differences between (i) platinum-resistant and sensitive primary tumours; (ii) platinum-resistant primary and paired resistant post-chemotherapy metastases; and (iii) platinum-sensitive primary and paired post-chemotherapy teratoma.
Methods: An institutional database identified platinum-resistant (defined as recurrence/persistence following platinum-based chemotherapy) and platinum-sensitive patients (matched by IGCCCG risk). Where available, archival specimens were retrieved and macro-dissected to ensured >80% cellularity. Gene-expression analyses used Nanostring nCounter and a customized list of 30 genes selected for potential role in platinum-resistance. Differences were compared using t-tests, with $p < 0.0017$ considered significant.
Results: We identified 19 platinum-resistant and 22 platinum-sensitive patients with available primary tumour specimens. Age (median: 34 y versus 28 y), IGCCCG risk (poor: 32% versus 27%) and histology (non-seminoma: 84% versus 86%) were similar. Median time to relapse in resistant patients was 3.4 mo; median follow-up for sensitive patients was 53.8 mo. Six resistant patients had paired post-chemotherapy metastases; 5 sensitive patients had paired post-chemotherapy teratoma. Gene expression in platinum-resistant *versus* platinum-sensitive primary tumours were not significantly different. When comparing platinum-resistant primary and paired post-chemotherapy metastases, OCT4 expression was significantly reduced in metastases ($p = 0.0003$). When comparing platinum-sensitive primary and paired post-chemotherapy teratoma, expression of both XPA ($p = 0.0010$) and AKT1 ($p = 0.0005$) were significantly increased in teratoma. This hypothesis-generating study suggests OCT4 loss as a potential biomarker of platinum-resistance.

GCT-75 Evaluation of inductor factors in the epithelial-mesenchymal transition (EMT) in testicular germ cell tumours (TGCT) and their roles in cisplatin resistance

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Background: A mechanism related to the development of cancer, metastasis and drug resistance is the epithelial-mesenchymal transition (EMT), a process in which epithelial cells lose their characteristics and acquire mesenchymal cell phenotype. EMT can be induced by several transcriptional factors, including Snail, Slug, Zeb1, and Twist. However, the molecular mechanisms involved in EMT induction in the TGCTs has not been elucidated. The aim of this study is to evaluate the inducing factors of EMT in TGCTs, as well as in the cisplatin resistant treatment.