

GCT-07 Moving to a digital pathology supraregional germ cell tumour service

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Background: Patients with testicular cancer in the UK are managed in supraregional networks serving a population of 2–4 million, seeing at least 100 new patients/year. Patient management includes the review of diagnostic glass slides from local sites for the supraregional MDT via postage of the original slides. The infrastructure to undertake this via a digital pathology platform was established across part of the Thames Valley network.

Methods: Philips slide scanners were deployed in 2018 (2 at Oxford (supraregional centre), 1 Milton Keynes and 1 Great Western Hospital Swindon). The service was evaluated as a traditional glass-slide based service in preparation for the switch to digital pathology.

Results: To calculate slide volumes, two specialist germ cell tumour pathologists reviewed 57 cases on glass slides from 6 centres (benign and malignant). The number of slides ranged from 3–75/case and mean reporting time was 18 minutes/case (range 7–49). Pathologists in Oxford validated digital reporting by creating a retrospective validation set. In March 2019, prospective validation and live digital reporting began with check of the glass slides before final pathology sign out. IT connectivity between image management systems in Oxford and Swindon was established in May 2019 such that cases scanned in Swindon could be viewed over the portal from Oxford. Digitising supraregional germ cell tumour services is feasible and brings potential benefits of efficiency, quality and libraries of images to build and test AI algorithms which may in the future support pathologists or generate new insights into tumour biology.

GCT-08 Ovarian and testicular malignant teratomas: A comparative pathological analysis

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Background: Malignant teratomas are a pathological germ cell tumour subtype. Ovarian teratomas are characterised by immature embryonic material which is graded for prognosis. In testicular teratomas, lymphovascular invasion (LVI) rather than grade determines prognosis and the presence of in-situ lesions, also unique to testes, determines classification. Guidelines recommend BEP chemotherapy for women whereas testicular teratomas are considered chemoresistant and treated surgically. We are investigating whether

the morphology of male and female teratomas explains these marked disparities.

Methods: Ovarian and testicular malignant teratomas diagnosed at UCLH from 2007–2019 were identified. Pathological reports were reviewed and morphological examination for grade, in-situ lesions and LVI is ongoing. Immunohistochemistry for mismatch repair proteins, PDL-1, p53, CD4, CD8, as possible therapeutic targets, will be conducted on tissue microarray.

Results: 15 ovarian (median age 20; range 11–36) and 22 testicular (median age 29; range 14–42) malignant teratomas were identified. Review of pathological reports showed that all testicular cases were mixed germ cell tumours with only 4 containing immature elements, whilst all ovarian cases were pure immature teratomas. Ovarian cases were Grade 1: 46.6%, Grade 2: 40% and Grade 3: 13.3%. Grade was not assigned in any testicular tumours. In-situ lesions were identified in 20/22(90%) testicular tumours but were not reported in ovarian cases. 54% of testicular cases were pT1, whilst 33% ovarian teratomas had metastasised, most commonly to the pelvic peritoneum.

Clinical Trials and Updates I

GCT-09 111-A single arm, phase 3 trial evaluating one cycle of BEP as adjuvant chemotherapy in high-risk, stage 1 non-seminomatous or combined germ cell tumours of the testis (NSGCTT)

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Background: Standard adjuvant treatment in the UK for high-risk stage one non-seminomatous germ cell tumours of the testis (NSGCTT) is two cycles of bleomycin, etoposide (360 mg/m²) and cisplatin (BE_{360P}) chemotherapy. The 111 trial investigates whether one cycle of BE_{500P} achieves similar recurrence rates.

Methods: 246 patients with vascular invasion positive, stage one NSGCTT or combined seminoma+NSGCTT were centrally registered in a single arm prospective study. Intervention: One cycle of bleomycin 30000 IU d1,8,15, etoposide 165 mg/m² d1–3 and cisplatin 50 mg/m² d1–2, plus antibacterial and GCSF prophylaxis. Outcome measurements and statistical analysis: The primary endpoint was two-year malignant recurrence, aiming to exclude a rate of 5% or greater. Participants had regular imaging and tumour marker assessment for five years.

Results: Median follow-up is 49 months (IQR 37–60). Ten patients had rising tumour markers at baseline and were excluded. Four patients had malignant recurrences at 6, 7, 13, and 27 months; all received second line chemotherapy and surgery; three remain recurrence-free at five years. Two-year recurrence rate was 1.3% (95% CI: 0.3–3.7%). Three additional patients developed non-malignant recurrences with teratoma differentiated in retroperitoneal nodes, rendered disease-free post-surgery. Grade 3–4 adverse events occurred in 41% participants (neutropenia 32%, febrile neutropenia 7%). BE_{500P} is safe and the two-year recurrence rate is consistent with that seen following