GCT-50 Acceptability of using circulating microRNAs for detection of malignant germ cell tumours: initial user consultation exercise

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Background: MicroRNAs of the miR-371~373 and miR-302/367 clusters are promising biomarkers for blood-based diagnosis and disease-monitoring of malignant germ-cell-tumours (MGCTs)[1–3]. These microRNA biomarkers have far superior sensitivity/specificity compared with current markers AFP and HCG[4]. Consequently, circulating microRNA testing may replace serial CT scans in MGCT follow-up[5]. The acceptability of this approach has not been explored with patients. Here, we addressed patient acceptability through a user consultation exercise.
Methods: Three males (26–59 y) participated in a four-hour in-depth workshop. Age at diagnosis was 23–42 y; two participants had experienced relapse and all participants were currently in follow-up. The workshop comprised an interactive presentation and focus-group discussion, which was digitally recorded and transcribed verbatim for analysis. Qualitative content analysis of transcripts was used to identify key themes/subthemes.
Results: All participants favoured the circulating microRNA test over CT scans for MGCT follow-up. Four themes were identified which favoured the microRNA test, namely:

1. Sensitivity: increased compared with current AFP/HCG markers;
2. Costs: reduced for both health service[6] and patients (parking/time-off-work);
3. Time: reduced compared with CT scan (both duration of test/scan and time for receiving results);
4. Practicalities: ease-of-access to blood testing versus scanning (process/fasting/need for oral contrast/scan anxiety/claustrophobia).

Initial consultation suggests the new circulating microRNA test is acceptable to patients with many potential benefits conferred, versus traditional CT scan follow-up. A second workshop (June 2019) will access views of a larger patient group to augment the current findings.

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Retroperitoneal Lymph Node Dissection (RPLND) and New Surgical Approaches

GCT-51 Robotic retroperitoneal lymph node dissection as primary treatment for patients with high-risk germ cell tumours

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Background: Surveillance, primary retroperitoneal lymph node dissection (RPLND), and chemotherapy are options for patients with high-risk stage I and IIA nonseminomatous germ cell tumours. Robotic RPLND (R-RPLND), which is included as an option in the American Urological Association Testicular Cancer guidelines, is an emerging alternative to open RPLND (O-RPLND). Relevant data regarding R-RPLND are provided.
Material and methods: Systemic review of primary R-RPLND series was conducted, comprising 100 patients. Only case series and retrospective reviews were identified, all with follow up <2 years. Clinicopathologic data and early outcomes are reported. Comparison to O-RPLND is based on historical data, as no literature directly comparing open and robotic RPLND exists.
Results: Unilateral and bilateral full-template nerve-sparing R-RPLND can be performed via multiple docking approaches. Although follow-up is limited in these series, R-RPLND has demonstrated equivalent oncological outcomes compared to O-RPLND, with similar lymph node yield, recurrence-free survival, and low rates of in-field or extra-template recurrence. Clavien Grade III complication rates are low, ranging from 4 to 8%. Maintenance of antegrade ejaculation was possible in >90% of patients. The advantages of R-RPLND include less opioid requirement, faster convalescence, decreased blood loss, lower transfusion rates, lower rates of ileus, and shorter length-of-stay (LOS) compared to O-RPLND, albeit with potentially longer operative time. R-RPLND may be more cost-effective than O-RPLND, primarily driven by decreased LOS. R-RPLND represents a promising opportunity to minimize morbidity in select patients with early stage germ cell tumour. Long-term efficacy data are lacking.

GCT-52 Robot-Assisted Retroperitoneal Lymph Node Dissection

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Background: Robot-assisted retroperitoneal lymph node dissection is playing an increasing role in the management of germ cell cancer. It aims to decrease surgical morbidity surgery whilst attempting to maintain the oncological outcomes of open surgery. It has been utilised in the primary setting, and increasingly post-chemotherapy, for nonseminomatous germ cell tumour. It is also being utilised in the primary setting for stage 2 seminoma.
Methods: A review of published series of robot-assisted retroperitoneal lymph node dissection was performed and the peri-operative and oncological outcomes were analysed. Comparison was made to relevant open retroperitoneal lymph node dissection series. Further analysis of technique and indications was also performed.
Results: Robot-assisted retroperitoneal lymph node dissection is technically feasible, and the extent of dissection is comparable to an

open approach. There are potential benefits regarding blood loss and length of stay in hospital. Long-term oncological outcomes are not yet available to conclude equivalence to an open approach and there are some concerns regarding the patterns of recurrence after robot-assisted retroperitoneal lymph node dissection.

GCT-53 Clinical Outcomes of Minimally Invasive Retroperitoneal Lymph Node Dissection and Single Dose Carboplatin for Clinical Stage 2a Seminoma

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Background: Standard management of Stage-2-seminoma (SEM) is 3 cycles of cisplatin-based multiagent chemotherapy or paraaortic/pelvic radiotherapy. Both treatments have potential short- and long-term toxicity. We report the use of minimally invasive (robotic or laparoscopic) retroperitoneal lymph node dissection (MI-RPLND) and adjuvant carboplatin.
Methods: From 01/2013 to 5/2019, patients with Stage-2a-SEM were considered for MI-RPLND. Adjuvant carboplatin (AUC7) x1 cycle was administered after confirmation of nodal involvement. Post-operative outcomes including length of stay, Clavien-Dindo 1 complications and pathological staging were recorded. CT was performed at 3 months to verify nodal clearance and patients monitored with standard surveillance.
Results: 36 modified unilateral templates were performed. These comprised 33 with pure seminoma and 3 with mixed germ-cell-tumours containing >90% seminoma with minor teratoma component. Median and mean post-operative stay was 1 and 1.5 days. One patient required conversion to open surgery and two experienced Clavien-Dindo 1 complications. All pts had preserved ejaculation. Mean number of nodes removed per patient 14.3(range 5–31) with average 1.75 nodes involved (range 0–5). 32 of 33 SEM patients had pathologically confirmed Stage-2a-SEM with one exception. After median follow-up of 46 months (mean 32), only 1/36 patients relapsed, at 18 mo and outside the template dissection. Overall, 5/36 (2/33 patients with seminoma) were subsequently exposed to 1–3 cycles of BEP. MIRPLND with single-dose carboplatin is a potential option for Stage-2a-SEM. This approach avoids radiotherapy and BEP in >90% of seminoma patients. In this series, a subset of patients (~10%) were over-staged using standard CT imaging.

GCT-54 A cost comparison of open versus robotic retroperitoneal lymph node dissection for germ cell tumours

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Background: Minimally-invasive approaches to retroperitoneal lymph node dissection (RPLND) offer less morbidity compared to open approaches in patients with germ cell tumours (GCT). Heretofore, the financial implications of such approaches have not been reported. We sought to compare the overall and subcomponent costs, reimbursement, and quality metrics among patients undergoing open (O-RPLND) versus robotic (R-RPLND) for GCT.
Methods: Patients with GCT who underwent RPLND at our institution between 2015 and 2018 were retrospectively compiled and stratified according to surgical approach (open versus robotic). Outcomes included total and subcomponent costs for the operative admission, operative time, and hospital length-of-stay (LOS). Outcomes were compared by open versus robotic surgical approach, and parallel subanalysis was conducted among patients who were chemotherapy-naïve. Outcomes were assessed by independent-sample Mann-Whitney U and chi-squared testing ($\alpha = 0.05$).
Results: 61 patients were included for analysis (44 open, 17 robotic). R-RPLND were more often performed in the primary setting. Operative time and LOS were significantly shorter for R-RPLND than O-RPLND. After exclusion of post-chemotherapy patients, total costs were comparable between the two groups, with OR costs counterbalanced by decreased hospital stay in the R-RPLND group. R-RPLND improves both operative time and LOS without increasing the total cost of the operative admission compared to O-RPLND in patients with GCT. R-RPLND is a financially sound alternative to open surgery in appropriate surgical candidates with GCT.

Radiology, Radiogenomics and Surgery

GCT-55 Radiogenomics and potential application to germ cell tumours

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Background: Cancer is caused by genetic (DNA) and epigenetic alterations and frequently arises as a clonal growth from a founder cell. The subclonal heterogeneity provides the basis for inter-metastatic heterogeneity which is of utmost clinical importance. New tumour sampling techniques and circulating tumour DNA methods may allow for more comprehensive evaluation of clonal composition. As both primary tumours and metastatic lesions are spatially/temporally heterogeneous, they would require multiple biopsies to extract and analyze individual small portions of tumour tissue, and still not allow complete characterization of the tumour genomic landscape.
Methods: Imaging has great potential to allow a comprehensive evaluation of the entire tumour burden in (ovarian) cancer as it is noninvasive and serially performed during treatment/follow-up.
Results: Imaging contrasts with genomics or proteomics, which are still challenging to implement into routine clinical practice. While initial retrospective studies linking phenotype with genotype in ovarian cancer have shown high prognostic power, they do not provide any spatial information, as quantitative imaging features are generated and averaged over the entire tumour, which assumes that tumours are heterogeneous but well mixed. This approach ignores spatial heterogeneity readily apparent on imaging. Indeed, recent genomics work has highlighted the presence of intratumoral variation in gene mutations and expression. However, little effort has been put into integrating imaging, histopathology and genomics. There is therefore a clear need for well designed prospective studies focused on meaningful integration of phenotype and genotype, rather than genomics in isolation, both for ovarian tumours and more broadly across cancer types.