GCT-P01 Salvage therapy for patients with recurrent and persistent malignant ovarian germ cell tumours

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Background: To explore the clinical characteristics, salvage therapy and prognosis of recurrent and persistent malignant ovarian germ cell tumours (MOGCTs).
Methods: The clinical data of 59 recurrent and persistent MOGCTs cases admitted in PUMCH during January 2000 to April 2018 were retrospectively analyzed. There were 21 recurrent and 38 persistent cases. The patients' age ranged from 1 to 39 years. FIGO stage: stage I in 33 cases, stage II in 4, stage III in 21 and stage IV in 1 case. There were 19 cases of immature teratoma, 26 cases of yolk-sac tumour, 1 case of dysgerminoma and 13 cases of mixed germ cell tumours. Primary cytoreductive surgery without fertility-sparing was performed in 10 cases, and primary fertility-sparing cytoreductive surgery was performed in 49 cases. Among the latter, secondary fertility-sparing cytoreductive surgery was performed in 40 cases, and secondary cytoreductive surgery without fertility-sparing was performed in 9 cases.
Preliminary results: During the mean follow-up duration of 51.8 months (range 2–279 months) after recurrence, 19 cases (32.2%) had a second relapse, and 16 patients (27.1%) died. The 5-year overall survival rate after relapse was 69.0%, 5-year progression-free survival rate after relapse was 66.0%. Optimal salvage surgery after recurrence was an independent prognostic factor ($p < 0.05$). Standardized primary therapy should be emphasized in the treatment of MOGCTs. For recurrent and persistent MOGCTs, optimal cytoreductive surgery and the adjuvant standardized chemotherapy have significant impacts on the prognosis of patients. For young nulliparous patients, secondary fertility-sparing salvage therapy can be taken into consideration.

GCT-P02 False elevation of alpha-fetoprotein in malignant ovarian germ cell tumours with hepatitis B infection

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Background: Serum alpha-fetoprotein (AFP) plays a crucial role in the management of malignant ovarian germ-cell-tumours (MOGCTs) and is an important index for chemotherapy termination. However, AFP elevations can also be caused by several benign diseases which may confuse/impact treatment decisions.
Methods: We describe two patients who were diagnosed as MOGCTs with persistent elevated AFP. In Case 1, a 29-year-old woman underwent left adnexectomy and was diagnosed with stage I yolk-sac tumour. She received three cycles of chemotherapy and AFP levels only declined after the first cycle and remained persistent elevated around 250 ng/ml during the last two cycles. A second-look surgery and additional two cycles of chemotherapy were performed, while no residual tumours were found and AFP level still high.
Results: A comprehensive evaluation revealed chronic active hepatitis without liver dysfunction in this patient, then she stopped further chemotherapy and started antiviral treatment. After that, the AFP levels gradually declined but remained above normal limits at the last follow-up. In Case 2, a 34-year-old woman was diagnosed with immature teratoma (stage I, grade 2) with initial abnormal AFP level of 14.71 ng/ml. She received complete staging surgery and chemotherapy, but the AFP level continued to increase to 188.2 ng/ml after the fourth cycle. She was diagnosed with chronic hepatitis B with normal HBV-DNA and liver function. She also accepted antiviral treatment and AFP levels started to present a downward trend. The false elevation of AFP in GCTs is a rare condition and should be interpreted by a thorough evaluation to avoid unnecessary treatments.

GCT-P03 Gene signatures for testicular germ cell tumours

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Background: Germ cell neoplasia in situ (GCNIS) has a high expression of *LIN28A*, *NANOG*, and *POU5F1*, genes associated with embryonic stem cells that reprogram for induced pluripotent stem cells (iPSC). There is little information as to the gene expression in the histologic types of testicular germ cell tumour type II (TGCT).
Methods: We evaluated 203 samples of normal testis tissue (NT), GCNIS, and TGCT from two archived microarrays and one RNAseq dataset. We evaluated how the histological types of TGCT expressed 24 genes.
Results: NT had a signature of *LDHC*. The histological types of TGCT had signatures: seminoma *KLF4*, embryonal carcinoma *DNMT3B*, yolk-sac tumour *AFP*, and teratoma *RB1*. TGCT signatures were *CCND2*, *LIN28A*, *NANOG*, *POU5F1*, and *PRAME*. Yolk-sac tumour was associated with *AFP* and choriocarcinoma was associated with *GCB5*. Seminoma and embryonal carcinoma were associated with *LDHB*. Eight highly expressed genes, including *LIN28A, NANOG*, and *POU5F1* were TGCT signatures. Our study has implications for implementation of iPSC technology in regenerative medicine.

GCT-P04 The influence of microenvironment components on cisplatin sensitivity in germ cell tumour cells

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Background: Type II germ-cell-tumours (GCTs) are the most common malignant tumours of young men with rising incidence. Although GCTs are sensitive to cisplatin-based chemotherapy, development of resistance leads to a lethal outcome. The (testicular) tumour microenvironment has an important influence on GCTs themselves, such as the development of drug resistance or the promotion of proliferation and anti-apoptotic signals. Mostly consisting of fibroblasts, immune cells (e.g. macrophages), and the extracellular matrix, the microenvironment secretes cytokines, mitogens, or other growth factors that can act directly on tumour cells, leading to the stimulation of different signalling pathways. Conversely, also the cells of the microenvironment can be influenced by GCTs. This study investigates the cross-talk between GCTs and their microenvironment and how this interaction influences development of cisplatin resistance.
Methods: GCT cell lines (seminoma; TCam-2, embryonal carcinoma; 2102EP, NCCIT, NT2/D1, and choriocarcinoma; JAR, JEG-3, BeWo) were cultivated in standard growth medium and medium conditioned by adult fibroblasts (MPAF), Sertoli cells (FS1), or M2 macrophages (differentiated from THP-1) with and without addition of cisplatin. By XTT cell viability assay, the influence of the conditioned medium on sensitivity towards cisplatin was evaluated over 96 hours.
Results: Cisplatin resistance was elevated in all GCT cell lines cultured in conditioned medium developed from microenvironmental components, such as fibroblasts, Sertoli cells, and macrophages. Thus, factors secreted by the stroma cells mediate a decrease in cisplatin sensitivity of GCT cells. Further studies need to identify these chemokines,

hormones, or growth factors, to decipher their molecular role in resistance towards cisplatin.

GCT-P05 Metastatic burned-out germ cell tumour of the testes and growing teratoma syndrome in a paediatric patient

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Background: "Burned-out" tumour of the testes is a rare entity in which the primary testicular germ cell tumour (GCT) has regressed. It is thought to result from immunologic/ischaemic changes. Growing teratoma syndrome is another uncommon clinical finding in patients with testicular GCT.
Methods: Case report.
Results: A 14-year-old male presented with a 1-month history of back pain, intermittent emesis, and a large left lower quadrant abdominal mass. The left testicle was smaller than the right, with no discrete palpable mass. Doppler ultrasound showed a 1.2 × 1.2 × 1.5 cm hypoechoic mass in the left testicle with coarse calcifications. CT chest/abdomen/pelvis revealed a 10 × 15 × 29 cm mixed solid/cystic retroperitoneal mass encasing the abdominal aorta, multiple bilateral pulmonary nodules, and an ill-defined hypodense left supraclavicular mass. Serum tumour markers (STMs) including β-HCG, AFP and LDH were elevated. Patient underwent a radical left inguinal orchiectomy and pathology demonstrated dense sclerosis with calcifications and no viable tumor. Retroperitoneal mass biopsy revealed yolk-sac tumour within teratomatous elements. Cisplatin-based chemotherapy was initiated. During cycle 2, CT imaging showed growth of retroperitoneal/supraclavicular masses with declining STMs. Patient underwent retroperitoneal lymph node dissection and resection of supraclavicular mass. Pathology was consistent with a mature teratoma. Burned-out tumour can present without a palpable testicular mass in the setting of metastatic GCT. Growing teratoma syndrome should be suspected when there is a growing mass despite normalization of STMs and surgical resection is the treatment given these lesions are not chemo-sensitive. The biology and pathogenesis of these rare entities require further investigation.

GCT-P06 Preparing teenagers and young adults for life beyond cancer

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Background: End of treatment (EOT) is an extremely challenging time for people with cancer. The Teenage and Young Adult (TYA) cancer service in Bristol aims to provide support to maximise the physical and psychological wellbeing as they adjust to life beyond treatment. Results of a local annual TYA patient survey showed that 80% of TYAs reported increased difficulties in relation to their wellbeing, which was heightened as they neared the EOT. TYAs in Bristol are discussed at the EOT within the TYA Multi-Disciplinary advisory Meeting (MDaT) yet support offered lacked consistency. To address this, a formal EOT clinic was piloted.
Methods: All TYAs that had finished treatment were invited to attend. The clinic is run by a Clinical Psychologist and Clinical Nurse Specialist structured using the IAM Portal, a specific digital platform for TYAs with cancer that includes an electronic holistic needs assessment. Where areas of need were identified, TYAs were supported to think about self-management, identifying appropriate services they could access. A letter and care-plan is formulated which is given to the TYA, treating team and GP.
Results: TYAs were asked to fill in an electronic questionnaire following the appointment to provide feedback. Early analysis suggests that all TYAs reported finding the clinic helpful or very helpful and the discussion was comprehensive. TYAs have indicated that they would change something about the way they look after themselves as a result of the appointment, although the added value of the clinic will need to be evaluated on an ongoing basis.

GCT-P07 Primary paediatric mediastinal germ cell tumours: 11 years' experience of children cancer hospital in Egypt

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Background: Primary mediastinal germ cell tumours (GCTs) in children accounts for only 6–18% of paediatric mediastinal neoplasms [1]. Mediastinal GCTs often require major surgical procedures to achieve adequate resection and still represent a challenge for paediatric oncologists.
Methods: A retrospective study of all cases with primary mediastinal (GCTs) ≤18 years of age treated at Children Cancer Hospital in Egypt from July 2007 to December 2018. Epidemiological data, clinical presentation, stage distribution, pathological variants, management, extent of surgery and outcome [overall (OS) and event-free (EFS) survival] were analysed.
Results: Mediastinal GCTs constitute 7.2% (29/401) of all extracranial GCTs. About 60% were <11 years, with male predominance (72.4%), Mixed GCTs and teratomas were the main pathology. Stage 3 and 4 were 76%. Complete resection was achieved in 14 patients while incomplete resection in 7 and 8 were irresectable. Significant treatment failure was encountered in 11/29 ($p = 0.003$) when correlated with extent of surgery. 10 y OS and EFS were 64.6% and 57.1%, respectively. Our study emphasises the importance of complete resection with encouragement of delayed and repeated resections whenever possible to improve outcome especially in older age.

Reference

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