Cotton Cancer Center, Lebanon, NH, USA. [15]Royal Victoria Infirmary, Newcastle upon Tyne, United Kingdom. [16]University of Cambridge, Cambridge, United Kingdom. [17]Surgery NYP/Weill Cornell Medical Center, New York, USA. [18]University Hospital Essen and Proton Centre, Essen, Germany. [19]University Hospital Bonn, Bonn, Germany. [20]Hospital for Sick Children, Toronto, ON, Canada. [21]University Hospital Augsburg, Augsburg, Germany

BACKGROUND: Central nervous system (CNS) germ cell tumours (GCT) comprise a heterogeneous and relatively rare group of neoplasms. Improving the ability to conduct international clinical trials for CNS GCT requires use of homogeneous, common objective disease assessments and standardised response criteria. Currently, different criteria are employed between European and North American protocols for assessing radiological disease response. METHODS: An international working group of the European Society for Paediatric Oncology (SIOPE) Brain Tumour Group (BTG) and North American Children's Oncology Group (COG) was therefore established to develop consensus recommendations for imaging response assessment for CNS GCT. The working group first reviewed existing literature and current practices and identified major challenges regarding imaging assessment. RESULTS: New clinical imaging standards were defined for the most common sites of intracranial GCT disease (suprasellar/pineal/bifocal), as well as for definition of loco-regional extension. In particular, clear standards were highlighted for definition of partial response (PR) and complete response (CR) to induction chemotherapy at different sites. Furthermore, growing teratoma syndrome (GTS) was clearly defined [apparent radiological increase in non-germinomatous GCT (NGGCT) size during induction chemotherapy despite normalising/normalised AFP/HCG markers – requiring surgery], to avoid such potential cases being classified as progressive disease (PD). CONCLUSION: This consensus will allow more consistent prospective neuroradiological evaluation of response to therapy for patients with CNS GCT and facilitate direct comparison of treatment outcomes across international studies. Ultimately, it may allow international trials to be developed and undertaken across a larger group of collaborating nations, which will be essential to answer many of the remaining questions for this rare but diverse group of tumours.

GCT-03. MONOGERM: A PROPOSED PHASE II TRIAL OF CARBOPLATIN OR VINBLASTINE MONOTHERAPY INDUCTION PRIOR TO RADIOTHERAPY FOR INTRACRANIAL GERMINOMA

Matthew Murray[1,2], John Apps[3], Anna Lawson[3], Laura Kirton[3], Andrew Peet[4], Theodoros Arvanitis[5], Lorna Fern[6], Dipayan Mitra[7], Nicholas Coleman[1], Thankamma Ajithkumar[2], Brigitte Bison[8], Gareth Veal[9], Daniel Stark[10], Giovanni Morana[11], James Nicholson[2,1], Lucinda Billingham[3]; [1]University of Cambridge, Cambridge, United Kingdom. [2]Cambridge University Hospitals NHS Foundation Trust, Cambridge, United Kingdom. [3]Cancer Research UK Clinical Trials Unit, University of Birmingham, Birmingham, United Kingdom. [4]University of Birmingham, Birmingham, United Kingdom. [5]Institute of Digital Healthcare, University of Warwick, Warwick, United Kingdom. [6]University College London Hospitals, London, United Kingdom. [7]Royal Victoria Infirmary, Newcastle-upon-Tyne, United Kingdom. [8]University Hospital Augsburg, Augsburg, United Kingdom. [9]Newcastle University, Newcastle-upon-Tyne, United Kingdom. [10]University of Leeds, Leeds, United Kingdom. [11]University of Turin, Turin, United Kingdom

BACKGROUND: Intracranial germinoma is chemosensitive but radiotherapy (RT) is needed for cure. In localised disease, three-drug standard-of-care (SOC) inpatient chemotherapy is used to reduce RT fields/dose. Concomitant diabetes insipidus is common, making chemotherapy delivery challenging. Small studies have demonstrated benefits from single-agent carboplatin or vinblastine in germinoma as an alternative to SOC. However, this needs prospective evaluation in a clinical trial. METHODS: We developed a trial, with a patient-public-involvement workstream, primarily evaluating whether single-agent chemotherapy (carboplatin or vinblastine) is non-inferior to SOC for inducing radiological complete response (CR) in localised disease, and is associated with reduced toxicity and improved quality-of-life (QoL), evaluated through patient-reported-outcome-measures (PROMs). RESULTS: The resultant proposed multi-centre, phase II proof-of-principle trial will investigate, in parallel, two single agents as monotherapy induction, in children/teenagers/adults with intracranial germinoma. Trial features include: a) Bayesian statistical design determining whether CR rate for either agent is sufficiently non-inferior to SOC; b) 'Flip-flop' design with alternating, continuous enrolment to the two single-agents, interim assessments after each recruited cohort, and early stopping rules for inferiority; c) Safety MRI, after 6-weeks of chemotherapy with real-time central-radiological-review; d) Proof-of-principle vinblastine monotherapy arm for metastatic patients awaiting definitive craniospinal-irradiation; e) State-of-the-art integrated imaging acquisition, QoL/PROM, pharmacokinetics and circulating microRNA studies to maximise information/learning; f) European and North American neuroradiological response criteria comparison and prospective evaluation of new consensus criteria. CONCLUSIONS: Trial results will: a) establish whether monotherapy is a treatment option in this setting, which may be practice-altering; b) use QoL/PROM data to inform on optimal treatment if results similar; c) use embedded radiological assessments to develop intracranial germinoma trials and facilitate European/US study comparisons; d) describe vinblastine pharmacokinetic data to inform future dosing schedules in this and other malignancies; and e) quantify circulating microRNAs, facilitating future non-invasive diagnosis/risk-stratification.

GCT-04. PATTERN OF TREATMENT FAILURES IN CENTRAL NERVOUS SYSTEM NON-GERMINOMATOUS GERM CELL TUMORS (CNS-NGGCT): A POOLED ANALYSIS OF CLINICAL TRIALS

Adriana Fonseca[1,2], Cecile Faure-Conter[3], Matthew Murray[4], Jason Fangusaro[5], Shivani Bailey[6], Stewart Goldman[7], Soumen Khatua[8], Didier Frapaz[9], Gabriele Calaminus[10], Girish Dhall[11], James Nicholson[4], Eric Bouffet[2], Ute Bartels[2]; [1]Children's National Hospital, Washington, DC, USA. [2]The Hospital for Sick Children, Toronto, ON, Canada. [3]Institut d'Hemato-Oncologie Pediatrique, Lyon, France. [4]Cambridge University Hospitals, Cambridge, United Kingdom. [5]Aflac cancer center, Atlanta, GA, USA. [6]Cambridge University Hospital, Cambridge, United Kingdom. [7]Phoenix Children's Hospital, Phoenix, AZ, USA. [8]Mayo Clinic, Rochester, MN, USA. [9]Institut d'Hemato-Oncology pediatrique, Lyon, France. [10]University Children's Hospital Bonn, Bonn, Germany. [11]O'Neal Comprehensive Cancer Center, Birmingham, AB, USA

BACKGROUND: Central Nervous System- Non-Germinomatous Germ Cell Tumors (CNS-NGGCT) are rare but curable tumors. Due to their rarity, treatment failures remain a poorly characterized disease with unfavorable outcomes. In this study, we sought to characterize the treatment failures in a large cohort of prospectively treated patients. METHODS: European and North American clinical trials for patients with CNS-NGGCT (SIOP-GCT96, SFOP-TGM TC 90/92, COG-ACNS0122 and COG-ACNS1123) were pooled for analysis. Additionally, patients included and treated in the UK and France national registries under strict protocol-guidelines were included as an independent, non-overlapping cohort. RESULTS: A total of 118 patients experienced a treatment failure. Twenty-four patients had progressive disease during therapy and additional eleven patients were diagnosed with growing teratoma syndrome (GTS). Patients with GTS are significantly younger and present with local failures and negative tumor markers. Eighty-three individuals experienced disease relapses after treatment ended. Patients' metastatic relapses presented significantly earlier than local relapses and were associated with tumor marker elevation (OR: 4.39; p=0.026). In our analysis, focal or whole ventricular (WVI) radiation therapy was not associated with an increased risk of metastatic relapses. CONCLUSIONS: Herein, we present the largest pooled dataset of prospectively treated patients with relapsed CNS-NGGCT. Our study identified younger age and negative tumor markers to be characteristic of GTS. Additionally, we elucidated that metastatic relapses occur earlier than local relapses, are associated with elevated tumor markers, and are not associated with the field of radiation therapy. These findings are of utmost importance for the planning of future clinical trials and the implementation of surveillance strategies in these patients.

GCT-05. MULTI-INSTITUTIONAL ANALYSIS OF TREATMENT MODALITIES IN METASTATIC GERMINOMA IN CHILDREN

Margaret Shatara[1], Mohammad H. Abu-Arja[2], Shannon MacDonald[3], Stephanie Reiners[4], Hamza Gorsi[5], Dinisha Govender[6], Hetal Dholaria[7], Sumanth Nagabushan[8], Jonathan Schwartz[9], Jen Chun Foo[10], Revathi Rajagopal[10], Stephanie Perkins[11], Ute Bartels[12], Mohamed S. Zaghloul[13], Nada A. Abdelhaleem[14], Moatasem El-ayadi[15], Mohamed S. Abdelbaki[1]; [1]The Division of Hematology and Oncology, St. Louis Children's Hospital, Washington University School of Medicine, St. Louis, Missouri, USA. [2]The Division of Hematology/Oncology, Department of Pediatrics, Texas Children's Cancer Center, Texas Children's Hospital, Baylor College of Medicine, Houston, Texas, USA. [3]The Department of Radiation Oncology, Francis H Burr Proton Therapy Center, Massachusetts General Hospital, Boston, Massachusetts, USA. [41]The Division of Hematology and Oncology, St. Louis Children's Hospital, Washington University School of Medicine, St. Louis, Missouri, USA. [5]The Division of Hematology and Oncology, Children's Hospital of Michigan, Central Michigan University, Detroit, Michigan, USA. [6]The Department of Oncology, Cancer Center for Children, The Children's Hospital at Westmead, Westmead, NSW, Australia. [7]The Department of Hematology, Oncology and Bone Marrow Transplant, Perth Children's Hospital, Perth, WA, Australia. [8]Kids Cancer Centre, Sydney Children's Hospital and University of New South Wales, Randwick, NSW, Australia. [9]The Department of Hematology and Oncology, Brain Tumor Program, Mayo Clinic, Rochester, Minnesota, USA. [10]Division of Hematology-Oncology, Department of Pediatrics, University Malaya Medical Center, Kuala Lumpur, Malaysia. [11]The Department of Radiation Oncology, Washington University School of Medicine, St. Louis, Missouri, USA. [12]Division of Haematology/Oncology, Department of Paediatrics, The Hospital for