GCT-56 Principles of surgical treatment for germ cell tumours in children

D. Billmire MD[1], D von Schweinitz MD, PhD[2]
[1]Department of Surgery, Indiana University, USA; [2]Department of Pediatric Surgery, University of Munich, Germany

Background: Surgical treatment is an important part of therapy for germ cell tumours. The wide variety of anatomical primary sites and varied histology result in the need for specific surgical guidelines for each location. This review will describe the rationale for surgical approach to gonadal and extra-gonadal germ cell tumours in children.
Methods: Recent studies regarding aspects of surgical care for germ cell tumours in the paediatric age-group and personal experience were reviewed for pertinent findings and general recommendations.
Results: Germ cell tumours occur in para-axial and gonadal sites and are often mixed tumours with both benign and malignant histology. Tumour markers should be sent preoperatively in all cases and complete resection is required for successful treatment. Surgery at diagnosis should include complete removal of the intact tumour with full surgical staging. Malignant tumours that are unresectable at diagnosis, or that would result in sacrifice of adjacent structures, may undergo neoadjuvant chemotherapy with good response and can subsequently undergo complete resection. Gonad sparing procedures may be used in carefully selected patients with suspected benign histology. Residual or enlarging masses with negative markers after initial treatment require surgical biopsy to direct further therapy. Teratomas most often occur in neonates and young infants and need a complete resection, because incomplete resections often result in recurrence with a malignancy rate of up to 75%. Resection in any location can be challenging with substantial complications and functional sequelae. Long-term follow-up is therefore important also for these benign tumours.

GCT-57 Study of Magnetic Resonance with Diffusion in Patients in Childhood and Adolescents with Extracranial Germ Cell Tumours

C.E.B. Cavalcante[1,2,3], H.M. Lederman[5], F.M.P. Souza[1,3], L.F. Lopes[3,4]
[1]Department of Diagnostic Radiology, Barretos Pediatric Cancer Center, Barretos, Brazil; [2]Barretos School of Health Sciences, Dr. Paulo Prata, FACISB, Barretos, Brazil; [3]Barretos Children's Cancer Hospital, Barretos, Brazil; [4]Brazilian Childhood Germ Cell Tumor Study Group, Brazilian Pediatric Oncology Society, São Paulo, SP, Brazil; [5]Department of Diagnostic Radiology, Universidade Federal de São Paulo, São Paulo, Brazil; Pediatric Oncology Institute/GRAACC, Department of Pediatrics, Universidade Federal de São Paulo, São Paulo, Brazil

Background: To quantify the findings of Magnetic Resonance Imaging (MRI) in the diffusion sequence for malignant germ cell tumours (GCT).
Methods: We retrospectively analyzed patients with GCT that had MRI with diffusion-weighted sequences. The Regions Of Interest (ROI) in MRI were manually drawn by a radiologist with experience in paediatric radiology, in a single cut with greater diffusion restriction area. Appearence Diffusion Coefficient values (ADC) were extracted for each ROI. To verify the relationships between the ADC and the histological subtype, we used the Mann Whitney test. The quantitative form of the ADCm of patients with malignant GCT at different times: pretreatment, restaging and postreatment/follow-up, we used the generalized linear statistical model. The patients were analyzed (n = 37) from two Pediatric Brazilian Protocols (TCG-2008 and TCG-2017).
Results: In this study, the histopathological findings showed a correlation with the ADC where malignant GCT can be differentiated from benign GCT and, more specifically, dysgerminoma and teratoma. We observed that the majority of tumours presented an increase in the value of ADC after the beginning of the treatment, reflecting therapeutic response with treatment-induced cell death. However, there were no significant changes in ADCm between the time of restaging and postreatment/follow-up. GCT measured pretreatment may help in the differential diagnosis of benign or malignant GCT, as well as differentiate dysgerminomas, seminomas or germinomas in histological diagnosis. ADCm also proved to be useful when we evaluated malignant GCTs and their response to treatment.

GCT-58 Pattern of events in children with sacrococcygeal germ cell tumours (GCT): The MAKEI-experience

G. Calaminus[1], M. Heimbrodt[1], R. Wessalowski[2], S. Schönberger[1], D.T. Schneider[3], C. Teske[1], I. Leuschner[4], D. Harms[4], U. Göbel[5], C. Vokuhl[4]
[1]Department of Paediatric Haematology and Oncology, University of Bonn, Germany; [2]Department of Paediatric Haematology and Oncology, University of Düsseldorf, Germany; [3]Clinic of Paediatrics, Municipal Hospital, Dortmund, Germany; [4]Paediatric Tumor Registry, Dept. of Paediatric Pathology, University of Kiel, Kiel, Germany; [5]Coordination Center for Clinical Studies, ESPED Surveillance Unit, University Düsseldorf, Germany

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Background: Sacrococcygeal GCT are only appearing in neonates and children up to the age of 4 years. Whereas neonates present only with teratoma, sometimes with yolk-sac tumour (YST) microfoci, older children show most frequently either pure or mixed YST (with teratoma).
Methods: Between 1st January 1996 and 31st of March 2017, 2796 children and adolescents with GCT were entered to the MAKEI registry, of whom 1,895 were treated according to consecutive MAKEI protocols. 482 had sacrococcygeal tumours: 104 malignant and 377 teratoma.
Results: Of the 104 malignant: 10 were T1N0M0 (group 1), 26 T2N0M0 (group 2), 48 T1/2 N+M0/M+ (group 3) and 13 where stated as bulky disease (group 4). 15 events occurred: 8 in group 2, 6 in group 3 and one in group 4. All except one had received platin based chemotherapy and developed local relapses. They were treated with local deep hyperthermia including platin chemotherapy (HyperPEI) and in five patients with additional radiation. Of the 15 events, 12 achieved 2nd CR, 3 died of their disease. Of the 377 teratoma, 29 relapsed of whom 22 where malignant (YST) relapses. All relapses where treated with platinum-based chemotherapy and/or HyperPEI. Only one patient died of disease. Incomplete resection appears to be the major risk factor for relapse in malignant (14/15 events) as well as in teratoma (13/29) of the coccyx.

GCT-59 Intraoperative MRI for complete resection in sacrococcygeal germ cell tumour

R.C. Ribeiro[1], W.E. Oliveira, Jr[1], G.S. Orsi[1], A.S.O. Sousa[1], V. Kremer[1], G.E. Martins[2], A.G.S. Vieira[2], C.E.B. Cavalcante[3], F.M.P. Sousa[3], L.F. Lopes[2]
[1]Department of Pediatric Surgery. Barretos Children's Cancer Hospital, Barretos, Brazil; [2]Department of Pediatric Oncology. Barretos Children's Cancer Hospital. Barretos, Brazil; [3]Department of Radiology. Barretos Children's Cancer Hospital. Barretos, Brazil

Background: Complete tumour resection together with the coccyx is the cornerstone of sacrococcygeal germ-cell-tumour management.