presented with an AFP >1000 ng/ml at diagnosis. 41 patients were evaluable with a median observation time of 2.4 years; 6/41 received chemotherapy alone. Primary site, histological components (if available), metastatic status and outcome were evaluated. Primary site was pineal in 29/41, suprasellar in 6/41, bifocal 1/41 and other in 5/41 patients. 10/41 patients were metastatic at diagnosis. Four to five courses of standard PEI and radiotherapy (RT) or 2 standard and two intensified PEI (as for SIOP CNS GCT II) were administered in 32 patients. Two received less then 4x PEI and RT, 6 patients <6 years were treated with PEI (either standard or intensified) alone. 16/34 patients with PEI and RT are alive in CR; 2/6 patients without RT survived. Overall, 18/40 (45%) survived. 10–15% of CNS MGGCT are high-risk patients by diagnostic AFP, with the pineal as the main tumour site. Outcome of <50% survival is unsatisfactory. Further research, international cooperation and common data analysis is needed to identify additional risk factors and develop alternative treatment strategies.

GCT-49. EVALUATION OF THE PERIOPERATIVE AND POSTOPERATIVE COURSE OF SURGERY OF PINEAL GERMINOMA ACCORDING TO THE SIOP CNS GCT 96 TRIAL

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INTRODUCTION: CNS germinoma, being marker-negative, are diagnosed by surgical biopsy. Here we evaluate the perioperative status and postoperative complications of patients with pineal germinoma who underwent a primary biopsy or resection, treated according to SIOP CNS GCT 96. METHODS: 235 patients with histologically confirmed germinoma were registered, of which 113 were pineal: 55 were biopsied and 58 underwent primary resection. Initial symptoms, tumour size, complications and neurological status were assessed. 111 patients were evaluable. RESULTS: Pure germinoma was present in 101 patients; 10 had additional teratoma components. The main clinical symptoms at diagnosis were headache (n=98), hydrocephalus (n=93), double vision (n=62), Parinaud syndrome (n=57) and papilloedema (n=44). Tumour size was documented in 81 patients (<2cm, n=14; 2-3cm, n=35; ≥3cm, n=32). 17 patients underwent primary total resection, 14 subtotal resection >50%, 26 subtotal resection <50%, 39 stereotactic biopsy, 11 endoscopic biopsy, 2 open biopsy and 2 not documented. The postoperative neurological status after resection was improved in 23 patients, unchanged in 27, deteriorated in 6 and not documented in one. Clinical status after biopsy improved in 26 patients, was unchanged in 15, deteriorated in 2 and not documented in 11. Postoperatively, 16/57 patients after resection and 5/54 after biopsy developed complications (Parinaud syndrome, double vision and hydrocephalus). CONCLUSION: Although surgical techniques have improved within recent decades, these results support the practice of biopsy over resection for histological confirmation of germinoma arising at the pineal site. Supported in part by German Cancer Aid.

GCT-50. LONG-TERM OUTCOMES OF INTRACRANIAL GERMINOMA IN A SINGLE INSTITUTION

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The treatment for intracranial germinoma has been well-established. Complete removal is not necessary, but radiation therapy is important. As the prognosis of patients with germinoma has become better, side effect of radiotherapy and chemotherapy must be well considered. The aim of this study was to evaluate the outcome of intracranial germinomas at Kyoto University Hospital from 1979 to 2019. 64 patients were diagnosed as intracranial germinoma. Patients with hCG > 100 IU/l and/or AFP > 10 ng/ml were excluded. Patients, who were histologically diagnosed as germinoma without information of hCG and AFP, were included. Follow-up time was from 2 to 486 months (median 136 months). Recently, germinoma patients were diagnosed with biopsy and received low dose whole-ventricle irradiation with intensity modulated radiation therapy (IMRT) (total 24-30Gy) and chemotherapy dominated by platinating agent. 10-year PFS was 80.21% (high dose radiation alone), 86.36% (high dose radiation with chemotherapy) and 100% (low dose radiation with chemotherapy). Many recurrent sites were out of irradiation areas. Late cognitive dysfunction was identified in 6 patients, and 5 of them were treated with high dose radiation. Patients with intracranial germinoma can obtain long-term survival. It is important to prevent recurrence without increasing late iatrogenic complications. Low dose radiotherapy and chemotherapy is highly effective, and it potentially reduces late adverse effects.

GCT-51. IMMUNE CHECKPOINT MOLECULES AND TUMOR INFILTRATING LEUKOCYTES IN THE TUMOR MICROENVIRONMENT ARE ASSOCIATED WITH THE GROWTH OF INTRACRANIAL GERMINOMAS

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The role of immune checkpoint molecules and the tumor immune microenvironment in the development of intracranial germ cell tumors remains unclear. In the present study, we investigated the expression of immune checkpoint molecules, as well as the number of tumor-infiltrating lymphocytes (TILs), in intracranial germinomas to determine whether there were any correlations between the statuses of these immune-related molecules/cells and clinical manifestations in patients with germinoma. The 8 patients were categorized based on the duration between symptom onset and pathological diagnosis into the long-term onset (LTO) group (> 1 year of symptoms, 3 patients) and the short-term onset (STO) group (< 1 year of symptoms, 5 patients). Compared with STO tumors, LTO tumors were significantly associated with a lower ratio of programed cell death ligand-1 (PD-L1)–positive tumor cells ($p = 0.012$), higher number of infiltrating CD3- and CD8-positive lymphocytes ($p = 0.016$, 0.003, respectively), and lower ratio of programed cell death-1 (PD-1)–positive cells per CD8–positive lymphocytes ($p = 0.047$). LTO germinomas were significantly smaller in size than STO tumors and tended to be present in patients with atypical tumor location. Our data suggest that the tumor immune microenvironment, including PD-1/PD-L1 signaling, is associated with the growth of intracranial germinomas. Immune checkpoint inhibitors might be a reasonable treatment option for recurrent germinomas or as replacement for radiotherapy in patients with intracranial germinomas.

GCT-52. TRANSCRIPTOME OF CENTRAL NERVOUS SYSTEM GERM CELL TUMOR REVEALS ITS PATHOGENESIS AND CONTRASTS WITH TESTICULAR COUNTERPARTS IN INTEGRATED OMICS ANALYSIS

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Germ cell tumors (GCTs) are unique neoplasms in that they arise from the migrated cells which were supposed to be directed to gonads. They occur in the central nervous system (CNS), as well as gonadal organs such as testis and ovary. Our genomic analysis revealed that they are characterized by mutations in MAPK and PI3K pathways, chromosomal instability and global