

hypomethylation in germinoma. However, there were plenty of cases which lacked driver alterations and their pathogenesis is yet to be fully unraveled. Here we aimed to uncover CNSGCT's pathogenesis from a transcriptomic perspective. Genome-wide transcriptional analysis was performed for 58 CNS and 3 testicular GCTs. This demonstrated that germinoma had a transcriptional profile characteristic to primordial germ cells (PGCs) at early embryogenesis, whereas non-germinomatous germ cell tumors (NGGCTs) showed that with differentiation into various tissues. Integration of transcriptome and methylome corroborated the above finding that pluripotency/meiosis-genes were unmethylated and highly expressed in germinoma compared with NGGCT. Co-analysis with transcriptome of various developmental stages of embryonic cells revealed germinoma and NGGCT had similarities in expression to PGC and embryonic stem cells, respectively. Multi-omics analysis with testicular GCTs (n=134) from TCGA showed shared genomic backgrounds between germinoma-seminoma and NGGCT-nonseminomatous GCT (NSGCT) in mutation and methylation profiles, and contrast in the chromosomal instability, which was more highlighted in testicular GCTs. These new insights into molecular profiles of GCTs lead to a better understanding of the complex pathogenesis of GCTs, and will hopefully provide a clue to future development of new treatments.

GCT-53. CASE OF INTRACRANIAL GROWING TERATOMA SYNDROME WITH DIFFICULTY IN TIMING OF RESECTION

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BACKGROUND: Intracranial Growing teratoma syndrome (iGTS) is a phenomenon in which a tumor with a teratoma component grows during treatment, and its pathological tissue is often a mature teratoma. Here we report a case of iGTS in which the timing of surgery was determined by tumor markers and changes in tumor size on MRI images. **CASE-REPORT:** 11-year-old boy with a short stature. He developed a headache and we found a pineal gland tumor on MRI. Due to obstructive hydrocephalus, an endoscopic third ventriculostomy and biopsy were performed. The pathological diagnosis was mature teratoma, but AFP was elevated at 104.2 ng/mL. Considering NGGCT, we started chemoradiation immediately. Despite the declining AFP, it gradually increased, at which point we suspected iGTS. Resection was considered, but at some point tumor growth had stopped, so radiation therapy and a second course of ICE therapy preceded the resection. Thereafter, the tumor was completely removed, and a third course of ICE therapy was performed. **DISCUSSION:** The onset mechanism of iGTS has not been elucidated, and its prediction is difficult. Early resection of the tumor is required, but discontinuation of radiation therapy and side effects of chemotherapy also need to be considered. In our case, resection was performed after normalization of AFP and recovery of myelosuppression. The patient followed an uneventful course, but the timing of resection was controversial. **CONCLUSION:** We experienced a case of iGTS in NGGCT, a mixed tumor with mature teratoma. The optimal timing of the resection was discussed and literature was reviewed.

GCT-55. INTRACRANIAL GERMINOMA ORIGINATING FROM ATYPICAL LOCATION WITH SUBCLINICAL ADH INSUFFICIENCY

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INTRODUCTION: Intracranial germinomas are rare tumors which usually develop in the midline structures and affect in 90% of cases the pineal gland and suprasellar regions. Sometimes they involve basal ganglia, septum pellucidum, and other regions. We report a very unusual presentation of an intracranial germinoma originating from the lateral ventricle. **METHODS:** A 10-year-old boy presented with a 1-year history of polydipsia and polyuria. During the hypertonic saline test, a low ADH was detected and established the diagnosis of subclinical ADH insufficiency. MRI showed a heterogeneously enhancing periventricular lesion in the lateral ventricle, but no other abnormal findings, including hypophysal stalk. Initially, the correlation of imaging findings and clinical symptoms were not clear. With suspected subependymoma, tumor removal was performed by small craniotomy. Since the intra-operative pathological diagnosis was germinoma, we performed only partial removal of the tumor. After establishing the histological diagnosis of germinoma, the patient received chemotherapy using carboplatin and etoposide, followed by radiation therapy. MRI showed no recurrence for five years after treatment. **RESULTS/CONCLUSION:** Our case presents two atypical features. First,

intracranial germinoma originating from the lateral ventricle is quite rare. Though the cases with intracranial germinoma originating from septum pellucidum and corpus callosum have been reported, this case is even different. Second, imaging findings did not match clinical symptoms. The cause of subclinical ADH deficiency may be the occult hypophysal germinoma. In conclusion, we report a 10-year-old case with a very unusual presentation of an intracranial germinoma originating from the lateral ventricle.

GCT-56. ACUTE MYELOID LEUKEMIA FOLLOWING CHEMORADIOTHERAPY FOR INTRACRANIAL GERMINOMA: A CASE REPORT

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INTRODUCTION: Therapy-related acute myeloid leukemia (t-AML) is known as possible complication of chemotherapy, especially topoisomerase II inhibitor, alkylating agents, and platinum agents. Although there are many reports of therapy-related leukemia associated with gonadal germ cell tumor, few cases have been reported on central nervous system (CNS) germ cell tumor. **CASE REPORT:** A 35-year old gentleman presented with diplopia. CT and MR imaging showed enhancing nodules on his right hypothalamus and around fourth ventricle, and differential diagnoses included sarcoidosis and germinoma. Biopsy for fourth ventricle lesion was performed via transvermian approach, and histopathological diagnosis was germinoma. He was treated by 3 cycles of CARE chemotherapy (carboplatin and etoposide) followed by craniospinal irradiation (CSI, 24Gy). After completion of chemoradiotherapy, he was followed up every half year by MRI, and there had been no evidence of tumor recurrence. Two years after chemoradiotherapy, however, the patient presented with bleeding tendency, which led to the diagnosis of AML. Based on the history of chemoradiotherapy and the presence of t(16;21)(q24; q22), t-AML was diagnosed. Complete remission was successfully achieved by chemotherapy consisting of idarubicin and cytarabine. **DISCUSSION:** t-AML was diagnosed after chemoradiotherapy in a patient with CNS germinoma probably due to the administration of topoisomerase II inhibitor, etoposide. The prognosis of t-AML is known to be poorer as compared with de novo AML. Therefore, intensive therapy such as allogeneic stem cell transplantation should be considered in younger patients. **CONCLUSION:** A possibility of t-AML should be kept in mind following chemotherapy for CNS germ cell tumors.

GCT-57. ARE MELATONIN LEVELS A RELIABLE MARKER FOR INTRACRANIAL GERM CELL TUMORS POST TREATMENT DEFICIENCY?

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BACKGROUND: Pineal is the melatonin-producing gland, with this hormone importantly acting as a central and peripheral chronobiotic, antioxidant and in energy metabolism. The urinary dosage of 6-sulfatoxymelatonin (aMT6s), a melatonin metabolite, is an indirect marker to estimate the total melatonin nocturnal production, ranging in clinically normal individuals from 10–50 micrograms(ug). The purpose of this study was to evaluate aMT6s in patients with diagnosis of intracranial germ cell tumors (iGCT) treated at IOP/GRAACC/UNIFESP. **METHODS:** After an interview to collect data about therapies employed and medications, night urine samples (from 8:00pm to first void in the morning) were collected and analyzed by ELISA. **RESULTS:** Twenty patients between 5–42 years old (mean 20.9 years), all male, were analyzed. Thirteen patients had diagnosis of Germinoma, 1 with Immature Teratoma, 5 NGGCT and 2 Mature Teratoma. The first site was pineal (N=15) and bifocal (N=5). The treatment was surgery/biopsy/2° look surgery in 17 patients associated with chemotherapy/ radiotherapy, except in 2 (pure teratoma-surgery only) and 1 (chemo only). Three patients had diagnosis by tumor markers treated with chemo only (N=1) and chemotherapy/radiotherapy (N=2). The levels of aMT6s were between 0.2–3.2ug in all participants, except in one (14.8ug-biopsy, chemo and RT). **CONCLUSION:** aMT6s levels found in most patients are below the expected for the general population suggesting that this is an appropriate marker for pineal tumors with melatonin deficiency. It may contribute to support future studies in this area and adoption of follow-up protocols, with eventual hormone supplementation and consequently improved quality of life.

GCT-58. BRAZILIAN CENTRAL NERVOUS SYSTEM GERM CELL TUMOR CONSORTIUM PROTOCOL

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