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INTRODUCTION: The prognostic impact of tumour marker (TM) decline rate has been demonstrated for extracranial poor prognostic non-seminomatous/germinomatous germ cell tumours (NGGCT). The current series aimed to assess if this finding can be applied to intracranial primaries. METHODS: Patients were retrieved from the SIOP-CNS-GCT-96 database. They were selected if they had i/assessable values of serum alpha-fetoprotein (AFP) and/or human chorionic gonadotropin (HCG) before and 18 to 28 days after the first course of chemotherapy and ii/ available data for outcome. Decline rate was calculated using a logarithmic transformation and expressed as time to normalization (TTN) as published by Fizazi (JCO 2004). TTN≤ 9 weeks for AFP and ≤ 6 weeks for HCG were considered as favourable decline rate. Prognostic impact of TTN on outcomes was assessed using the log-rank test. RESULTS: Out of 149 patients with NGGCT, 59 were evaluable for both HCG and AFP TTN of whom 44 (74%) had a favourable decline rate. After a median follow-up of 88 months (2–251), 20 relapses and 15 deaths occurred. The 5-year PFS rates were 72% and 60% in patients who had a favourable and an unfavourable TTN, respectively (p=0.15). The 5-year OS rates were 77 % and 69%, respectively (p=0.66). Separate analysis of TTN based only on AFP or only on HCG gave similar results. CONCLUSION: Despite the use of a methodology similar to that used in extracranial NGGCT, no significant impact of serum TM decline on prognosis was observed, but insufficient statistical power cannot be ruled out.

GCT-30. TREATMENT OF PRIMARY INTRACRANIAL GERM CELL TUMORS: SINGLE INSTITUTION EXPERIENCE OF 74 CASES WITHOUT HISTOLOGICAL CONFIRMATION

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BACKGROUND AND OBJECTIVE: Primary intracranial germ cell tumors (PIGCTs) are a group of heterogeneous tumors. It is very difficult to treat those patients without pathological diagnosis. This study retrospectively analyzed the clinical data and outcomes of patients with clinically diagnosed (without histologically confirmed) PIGCTs in SunYat-sen University Cancer Center. METHODS: Patients who were clinically diagnosed as PIGCTs without histological diagnosis through surgical resection or biopsy were included in this study. Patients were analyzed for clinical characteristics, treatment patterns, outcomes and adverse effects. RESULTS: From May 2002 to July 2014, 74 patients clinically diagnosed with PIGCTs received chemotherapy and/or radiotherapy at the Sun Yat-sen University Cancer Center. The median age was 16.5 years old (4–45 years old, majority was teenagers). The most of tumors were found in male, and located in the pineal and suprasellar regions. When the patients were grouped into diagnostic chemotherapy group (57 cases), diagnostic radiotherapy group (5 cases) and gamma knife radiosurgery group (12 cases) based on their initial anti-tumor therapy. The 5-year survival rates were 84.3%, 75.0% and 75.0%, respectively. There was a trend that the chemotherapy group got a better survival. Patients were allocated to secretory tumor group (49 cases) and non-secretory tumor group (25 cases) based on their levels of tumor makers (α-FP and β-hCG). The 5- year survival rates were 80% and 77.8% (P value = 0.966), respectively. CONCLUSION: Clinical diagnosed PIGCT (without histological confirmation) patients may obtain good responses when receiving comprehensive treatments of chemotherapy combined with radiotherapy.

GCT-31. DIAGNOSTIC CAPABILITY OF CSF-PLAP ON INTRACRANIAL GERM CELL TUMOR

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BACKGROUND: Since the majority of intracranial germ cell tumor(GCT) is sensitive for chemoradiation, biopsy specimens are usually tiny and not enough for accurate pathological diagnosis. To supply complementary diagnostic information, a-fetoprotein or human chorionic gonadotropin-b are important biomarkers. Recently CSF-placental alkaline-phosphatase(PLAP) is also reported as an additional biomarker in intracranial GCT. This study's purpose is to evaluate the significance of CSF-PLAP. METHODS: CSF-PLAP was obtained from the patients with the intraventricular and periventricular tumor before any adjuvant therapy. Definitive diagnoses were made by histopathological information and/or their clinical courses; GCT(germinoma or non-germinomatous GCT(NGGCT)) or other tumors. In GCT, the relationship between CSF-PLAP and tumor reduction volume was evaluated. Tumor volumes were calculated on gadolinium-enhanced T1-weighted magnetic resonance imaging before and after initial chemoradiotherapy. RESULTS: Between 2005 and 2019, 42 patients were studied: 24 with GCT and 18 with others. CSF-PLAP value in patients with GCT was significantly higher than those with others: the Specificity was 88% and the sensitivity was 95% at the cutoff value of 8.0 pg/ml. For GCT patients, CSF-PLAP value tended to be higher in germinoma(n=12, mean 4756 pg/ml), compared to the value in NGGCT(n=7, mean 332 pg/ml), although there was no statistical difference. There was a significant positive correlation between initial CSF-PLAP value and tumor reduction volume. CONCLUSION: CSF-PLAP is a useful tumor marker for GCT differentiating from the other tumors located in intraventricular and periventricular region and CSF-PLAP value might correlate with the volume of germinomatous component of the tumor.

GCT-33. A PHASE 2 TRIAL OF RESPONSE-BASED RADIATION THERAPY FOR PATIENTS WITH LOCALIZED CENTRAL NERVOUS SYSTEM GERM CELL TUMORS: A CHILDREN'S ONCOLOGY GROUP (COG) STUDY. IMPACT OF RAPID CENTRAL RADIOTHERAPY REVIEW ON RADIOTHERAPY QUALITY AND PATTERN OF FAILURE FOR NON-GERMINOMATOUS GERM CELL TUMORS

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BACKGROUND: COG ACNS 1123 tested reduced radiotherapy (RT) for non-metastatic, non-germinomatous germ cell tumor (NGGCT) patients. The impact of central review on quality of RT and pattern of failure for NGGCT patients is evaluated. METHODS: Patients who achieved a complete response (CR) or partial response (PR) to induction chemotherapy were eligible for reduced dose and field RT of 30.6 Gy whole ventricular field (WVI) and 54 Gy tumor-bed total dose. An online contouring atlas was available. Within three days of RT start, WVI plans were submitted for rapid central review. Within one week of RT completion, the complete RT record was submitted. Brain and spine MRIs of relapsed patients were centrally reviewed. RESULTS: Between 5/2012–9/2016, 107 eligible patients were accrued and 70 met reduced RT criteria. Rapid RT review was performed for 49 (70%) of 70 patients. Forty-four (89.8%) required no modification. All modifications were completed and plans became compliant. Final central review was performed for 66 evaluable patients: 62 (94%) were per protocol; there were 2 major (1 dose and 1 target) and 2 minor deviations. Eight patients progressed; none had deviations. Median time to progression was 3.54 months (range: 1.7–19.1) from RT start. All failures had a spine component; two also had cranial component: one local progression (within the RT boost volume) and one leptomeningeal disease. CONCLUSION: Providing an online contouring atlas and performing a rapid central review lead to high quality radiotherapy on this prospective trial. The deviations did not contribute to the pattern of failure.

GCT-34. ELUCIDATION OF THE MECHANISMS OF TUMORIGENESIS IN INTRACRANIAL GERM CELL TUMOR BY WHOLE GENOME SEQUENCE

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Intracranial germ cell tumors (iGCT) are heterogenous group of primary brain tumors that consist of various subtype, and driver genetic alterations in iGCTs remain largely unknown. We have previously reported in a study