Analysis of Clinical Features on Death from Intracranial Germ Cell Tumors (GCTs): A Retrospective Cohort Study

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Introduction
Central nervous system (CNS) germ cell tumors (GCT) account for about 3% of primary brain tumors in children, and have a wide pathological spectrum. Over 90% of the 5-year overall survival rate was initially reported in the use of cranial radiotherapy. Standard management of central nervous system GCT is still controversial. Treatment programmes aimed at improving progression-free and overall survival are under way.

Aims
Primary intracranial germ cell tumors (GCTs) are rare diseases that found mainly in adolescents and young adults. The present study aimed to investigate the clinical features associating with intracranial germ cell tumors (GCTs) of poor prognosis.

Materials & methods
We retrospectively analyzed the death data cohort based on 47 patients (30 males and 17 females) who had been diagnosed with GCTs between 2005 and 2018 in our hospital. The median age at initial diagnosis was 16 years (range, 3-60 years). Among those, 18 patients were germinoma and 29 patients were non-seminomatous germ-cell tumors (NGGCTs). There were 33 solitary and 14 multifocal tumors intracranially.

Results
- According to Kaplan-Meier survival analysis, children aged ≤ 10 years were observed with a very short survival compared to patients aged > 10 years, indicating a 5-year survival rate of 0 and 50%, respectively (P < 0.001).
- In the subgroup of patients > 10 years, the 5-year survival for AFP > 1.5 ng/ml was 25%, in comparison to 66% for AFP ≤ 1.5 ng/ml (P < 0.05).
- Disseminated tumors were found to be the most prominent factor for prognosis in children aged ≤ 10 years: the 1-year survival for MR positive versus MR negative of disseminated tumors were 0 and 62.5%, respectively (P < 0.05).
- Solid survival advantages were found in patients received stereotactic radiosurgery (SRS) compared to none. The 5-year survival for SRS versus non-SRS patients were 62% and 29%, respectively (P < 0.05).

Conclusions
- Our data highlights a number of critical factors that may facilitate the prognosis stratifications of GCTs.
- What’s more, neither the locations of the primary tumors, nor the numbers of lesions are associated with the prognosis of GCTs. These results warrant further investigation via randomized prospective studies.