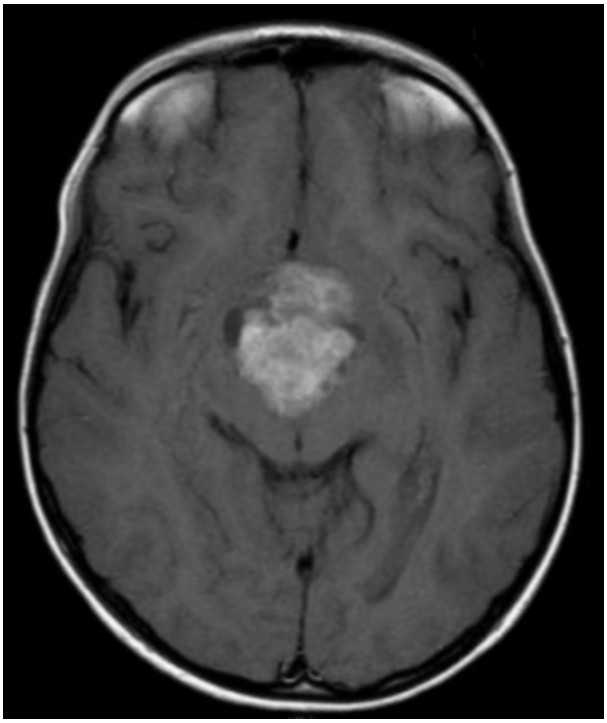
# Intracranial germ cell tumor outcome



Regarding the good overall survival rate, quality of life is a significant aspect to consider in intracranial germ cell tumor outcome.

Diverse histology, similarity to gonadal germ cell tumor (GCT), predilection to one sex, and geographic difference in incidence all present enigmas and fascinating challenges. The treatment of iGCT has advanced for germinoma to date; thus, clinical attention has shifted from survival to long-term quality of life. However, for non-germinomatous GCT, current protocols provide only modest improvement and more innovative therapies are needed.

Next-generation sequencing studies have revealed the genomic landscape of iGCT. Novel mutations in the KIT-RAS-MAPK and AKT-MTOR pathways were identified. More importantly, methylation profiling revealed a new method to assess the pathogenesis of iGCT. Molecular research will unleash new knowledge on the origin of iGCT and solve the many mysteries that have lingered on this peculiar neoplasm for a long time [1)].

Recurrence was associated with invasiveness as seen on preoperative imaging ($p = 0.0385$) and cystic tumor ($p = 0.048$) [2)].

Outcomes for malignant relapse following initial diagnosis of non-germinomatous GCT (NGGCT) were exceptionally poor; the few survivors received thiotepa-based high-dose-chemotherapy and autologous-stem-cell-rescue (HDC + AuSCR) which is a treatment option at first malignant relapse for such patients, with further surgery/irradiation where feasible [3)].

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The role of chemotherapy remains unclear, whereas surgery is limited to biopsy for proof of histology. Regarding the good overall survival rate, quality of life is a significant aspect to consider in these patients. We present a single institution analysis of patients with intracranial germinoma and analyze

the long-term outcome with special regard to quality of life. Thirty-three patients with intracranial germinomas were analyzed by chart review, telephone interview, and neurological assessment. Additionally, a survey on quality of life was performed. The 10-year overall survival rate was 82.1 % at a mean follow-up of 141 (22-306) months. Three quarters (76 %) of the patients reached a favorable neurological outcome on the Modified Rankin Scale (mRS 0-2). However, the self-reported quality of life was significantly worse in germinoma patients compared with a healthy control group ($p < 0.001$). Surgical resection of the tumor led to no improvement regarding overall survival, neurological outcome, and quality of life. In terms of cognitive functioning, patients with tumor resection were significantly more impaired than biopsied patients ($p = 0.04$). Although germinomas are efficiently treatable tumors, the restrictions in quality of life in these often young patients are considerable, including financial difficulties. There seems no justification for tumor resection in newly diagnosed cases suspicious for germinoma as the cognitive outcome is worse than in biopsied patients, and there is no effect on overall survival [4].

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Germinomas have a good prognosis, as over 90% of patients can be effectively treated with radiation therapy. The dose and volume of radiation therapy needed for disease control is not well established, and controversy exists concerning the need for whole brain or craniospinal radiation therapy for localized tumors. Germinomas are also chemosensitive and recent reports suggest that the dose and volume of radiation therapy required for disease control can be lessened with the addition of adjuvant chemotherapy. The outcome for patients with nongerminomatous germ cell tumors is less favorable. Radiation therapy alone will result in disease control in 40%-60% of patients. The addition of chemotherapy to radiation therapy may improve the rate of survival [5].

# References

1)

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