Primary central nervous system lymphoma outcome

- CD8 and CD4 CAR-T cells are associated with outcome and toxicity of tisagenlecleucel in central nervous system lymphoma
- Primary central nervous system lymphoma: A 7 years single-center experience: Running title: Primary central nervous system lymphoma: diagnostic tools
- Autologous stem cell transplantation with thiotepa, busulfan, and cyclophosphamide conditioning in patients with central nervous system lymphoma: a phase II study
- Comparison of survival and progression after focal- or whole brain radiotherapy in patients with primary CNS lymphoma - Results from a large multicenter analysis of the German Society of Radiation Oncology's Neuro-Radio-Oncology Working Group (DEGRO AG-NRO)
- Beta-2 microglobulin in lymphoma
- Clinical outcomes of newly diagnosed PCNSL treated with rituximab-methotrexate-cytarabine with or without ibrutinib: a retrospective study
- Novel Therapies in Primary Central Nervous System Lymphoma
- Primary Diffuse Large B-Cell Lymphoma of the Central Nervous System-Outcomes in Finland: A Nationwide Population-Based Study

The IPCG criteria are widely used in routine practice for the assessment of treatment response in Primary central nervous system lymphoma. However, the value of the IPCG criteria for ultimate clinical outcome prediction is largely unclear, mainly due to the uncertainty in delineating complete from partial responses during and after treatment.

Lauer et al. explored various MRI features including semi-automated 3D tumor volume measurements at different disease milestones and their association with survival in 93 CNSL patients undergoing curative-intent treatment.

At diagnosis, patients with more than three lymphoma lesions, periventricular involvement, and high 3D tumor volumes showed significantly unfavorable PFS and OS. At first interim MRI during treatment, the IPCG criteria failed to discriminate outcomes in responding patients. Therefore, they randomized these patients into training and validation cohorts to investigate whether 3D tumor volumetry could improve outcome prediction. They identified a 3D tumor volume reduction of ≥97% as the optimal threshold for risk stratification (=3D early response, 3D_ER). Applied to the validation cohort, patients achieving 3D_ER had significantly superior outcomes. In multivariate analyses, 3D_ER was independently prognostic of PFS and OS. Finally, we leveraged prognostic information from 3D MRI features and circulating biomarkers to build a composite metric that further improved outcome prediction in CNSL.

They developed semi-automated 3D tumor volume measurements as strong and independent early predictors of clinical outcomes in CNSL patients. These radiologic features could help improve risk stratification and help guide future treatment approaches [1)]

The outcome of primary central nervous system lymphoma (PCNSL) varies and depends on several factors such as:

Patient age and overall health status

The size and location of the tumor

The type of lymphoma

The response to treatment

The presence of other medical conditions.

Generally, PCNSL is considered an aggressive form of cancer, and treatment usually involves a combination of chemotherapy and radiation therapy. The 5-year survival rate for PCNSL ranges from 20-50%. With improved treatment options and early diagnosis, the prognosis for PCNSL has improved in recent years.

The survival time for patients with Primary central nervous system lymphoma may be longer than previously thought, especially for patients with leptomeningeal seeding and lesions with hemorrhagic components Also, non-enhancing tumors may be less aggressive than enhancing tumors [2)]

A difference in clinical response and PFS favored a more aggressive protocol, but the toxicity of the multiagent combinations was significantly higher. The prognosis in younger was better than in older patients, with higher rates of clinical response, PFS, and OS, although not statistically significant. Overall treatment outcomes are encouraging; however, there is a real need for an adaptive approach for older patients and balancing between the effectiveness and side effects [3)].

With no treatment, median survival is 1.8–3.3 months following diagnosis.

With radiation therapy [4)] median survival is 10 months, with 47% 1-year median survival, and 16% 2-year median survival. 3-year survival is 8%, and 5-year survival is 3–4%. With intraventricular MTX, the median time to recurrence was 41 mos [5)].

Occasionally, prolonged survival may be seen [6)] About 78% of cases recur, usually ≈ 15 months after treatment (late recurrences also are seen). Of these recurrences, 93% are confined to the CNS (often at another site if the original site responded well), and 7% are elsewhere.

In AIDS-related cases, the prognosis appears worse. Although complete remission occurs in 20– 50% following XRT, the median survival is only 3–5 months [7) 8)] usually related to AIDS-related opportunistic infection. However, neurologic function and quality of life improve in ≈ 75% [9)]

Although there are individual studies that show trends, there are no prognostic features that consistently correlate with survival.

The overall response rates and long-term survival of primary central nervous system lymphoma (PCNSL) are still significantly inferior to the results achieved in similar subtypes of extranodal non-Hodgkin's lymphoma. It is clearly necessary to investigate new therapeutic methods on PCNSL.

1)
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