Instituto Nacional de Cancerología

Beyond the Blood-Brain Barrier: CNS Involvement in Hodgkin's Lymphoma A Single-Center Study Revealing 5.2% Incidence, Clinical Patterns, Treatment Outcomes and Prognostic Factors

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Background

Central nervous system (CNS) involvement in Hodgkin's Lymphoma (HL) is traditionally considered extremely rare, with reported incidence rates between 0.02-0.5%.

This retrospective study from the National Cancer Institute of Mexico (InCan) challenges this perception with new epidemiological and clinical data.

Methods

We conducted a retrospective single-center study at Mexico's National Cancer Institute (InCan) reviewing 1,024 electronic medical records from January 2004 to July 2024.

Among 927 patients with classical HL diagnosis, we identified 48 with confirmed CNS infiltration through imaging studies, cerebrospinal fluid analysis, or tumor biopsy.

Clinical characteristics, laboratory findings, treatments, and outcomes were analyzed.

Results

Key Demographics

- 5.2% CNS Involvement
- 34.5 Median Age
- 64.6% Male
- 12.5% HIV infection

Disease Characteristics

- 73% Advancee disease
- (Stage IV)
- 87.5% B symptoms
- 91.7% High/intermediate Hasenclever IPS

Histopathology

- 45.8% Mixed cellullarity subtype
- 35.4% Nodular sclerosis subtype
- 91.7% CD30+
- 73% CD15+
- 25% EBV-associated markers (EBER/LMP-1)

Presentation Time

- 31.33% Primary CNS Involvement
- 68.8% Secondary CNS Involvement

Neurological symptoms

- 79.2% of patients presented them
- 17.7% Radiculopathy
- 16.6% Spinal cord syndrome

Image Findings

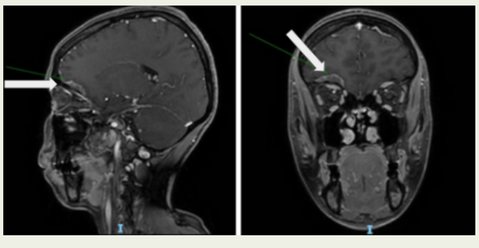
- 26.4% Meningeal involvement
- 23.6% Spinal cord involvement

Treatment

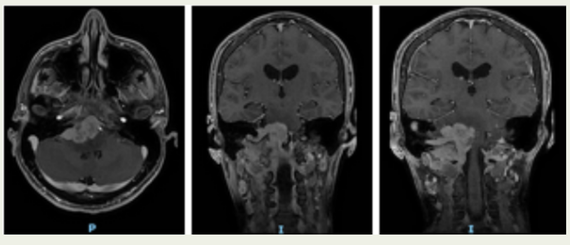
- 77% ABVD
- 43.8% Radiotherapy
- Various salvage regimens

Survival Outcomes

- Median OS from HL diagnosis: 2.3 years
- Median OS from CNS involvement: 0 months
- 6-month survival: 21%.



Supratentorial infiltration of InCan patient (right frontal lobe)



Extra-axial infiltration of InCan patient, causing displacement of the pons and medulla oblongata with partial collapse of the fourth ventricle

Clinical Implications

This study reveals CNS involvement in HL occurs at significantly higher rates than previously recognized (5.2% vs 0.02-5%)

Potencial Risk Factors

Male sex, age >45 years, advance stage, mixed cellularity type, HIV infection

The extremely poor prognosis highlights the urgent need for improved diagnostic strategies and novel therapeutic approaches for this subset of HL patients.

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