Primary Bone Marrow Hodgkin Lymphoma in Adults: A Systematic Review of Clinical Features, HIV/EBV Associations, and HLH Overlap

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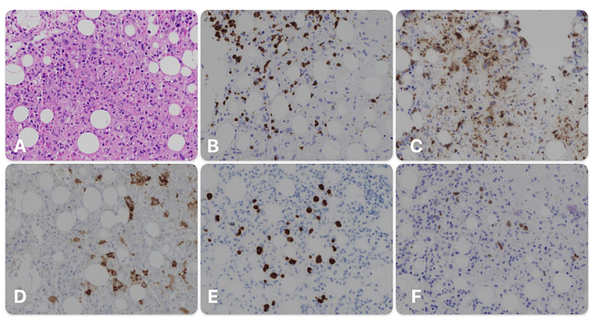
Background

- Primary bone marrow Hodgkin lymphoma (PBM-HL) accounts for fewer than 1% of Hodgkin lymphoma cases, defined by marrow involvement without nodal or solid-organ disease at presentation.
- Clinically mimics infection, marrow failure, or hemophagocytic lymphohistiocytosis (HLH).
- Patients present with fever, cytopenias, and systemic inflammation rather than lymphadenopathy.
- Diagnosis is frequently delayed or missed, particularly in HIV-positive patients.
- Objective: to describe the clinical features, HIV/EBV associations, HLH overlap, treatment approaches, and outcomes of adult PBM-HL based on published case-level data.

Methods

- Systematic review of published adult PBM-HL cases via PubMed search and citation chasing.
- Cases required histologic diagnosis of Hodgkin lymphoma on bone marrow biopsy with primary or isolated marrow involvement and extractable patient-level data.
- Cases with overt nodal or solid-organ disease at presentation were excluded.
- Extracted variables: age, sex, HIV and EBV status, presence of HLH/hemophagocytosis, treatment received, and reported outcomes.



(A) Hematoxylin and eosin stain; (B) CD3 immunohistochemical stain; (C) CD15 immunohistochemical stain; (D) CD30 immunohistochemical stain; (E) PAX5 immunohistochemical stain

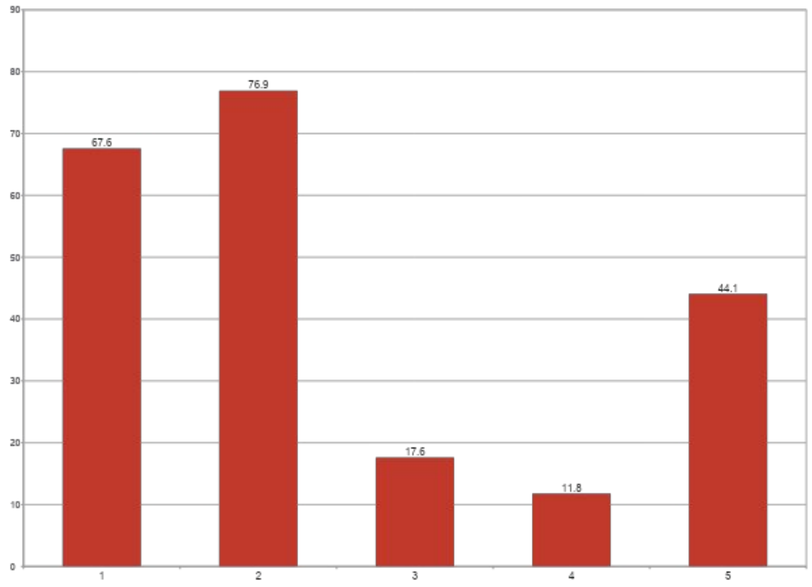
Results

- 34 adult PBM-HL cases identified.
- Median age 40.5 years; 79.4% male.
- HIV-positive in 23 cases (67.6%).
- EBV-positive in 10 of 13 tested cases (76.9%).
- HLH/hemophagocytosis documented in 6 cases (17.6%).
- Treatment varied widely: ABVD/AVD, CHOP-like regimens, etoposide/dexamethasone for HLH, brentuximab vedotin-based therapy.
- Outcomes poorly reported: remission/improvement in 4 (11.8%), early death in 1 (2.9%), no outcome data in 15 (44.1%).

Clinical Pearl

In HIV-positive patients with unexplained cytopenias and systemic inflammation, consider early bone marrow biopsy to rule out PBM-HL.

Figure 1: Key Clinical Findings (%)



Conclusions

- PBM-HL follows a recognizable pattern: HIV-positive, often EBV-associated, presenting with cytopenias and systemic inflammation without lymphadenopathy.
- Bone marrow biopsy should be pursued early in this clinical setting.
- Delayed diagnosis is common and likely carries real clinical consequences, though outcome data to quantify this remain sparse.

Table 1: Case Summary

Characteristic	Category	n	%
Total cases	Adult PBM-HL cases reviewed	34	—
Age	Median 40.5 years	—	—
Sex	Male	27	79.4%
HIV status	Positive	23	67.6%
EBV status	Positive (of 13 tested)	10	76.9%
HLH / hemophagocytosis	Documented	6	17.6%
Treatment	ABVD/AVD, CHOP-like, etoposide/dex, BV-based	—	—
Outcome	Remission or improvement	4	11.8%
Outcome	Early death	1	2.9%
Outcome	Not reported	15	44.1%

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References

Reference list available in the full manuscript. Case sources were identified via PubMed search and citation chasing (see Methods).