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# Unmet needs of patients with intravascular large B-cell lymphoma: three case reports and a literature review

**Key words:** Intravascular large B-cell lymphoma, clinicopathologic features, molecular genetic characteristics, treatment strategies

# *Summary*

Intravascular large B-cell lymphoma (IVLBCL) is a rare subtype of extranodal diffuse large B-cell lymphoma (DLBCL), characterized by neoplastic lymphocyte proliferation within the lumen of small blood vessels, which leads to difficulties in early diagnosis and a very poor prognosis. We present a case series of three patients and describe the clinical characteristics and pathological features of patients with IVLBCL.

# Innovation points

**A series of images and tables demonstrating the pathological and clinical features of IVLBCL cases**

**Table 1 | Summary of clinical manifestations of the three cases of IVLBCL.**

	Case 1	Case 2	Case 3
Sex/age (years)	M/77	F/66	M/59
Biopsy site	Prostate, BM	CNS	CNS
Involving site	Prostate, BM	CNS, lymph nodes	CNS
Haemoglobin (g/L)	92 (131-172)	134 (113-151)	102 (131-172)
White cell count ( $\times 10^9/L$ )	7.2 (1.0-4.0)	5.3 (1.0-4.0)	3.2 (1.0-4.0)
Platelets ( $\times 10^9/L$ )	76 (100-300)	162 (100-300)	76 (100-300)
Lactate dehydrogenase (U/L)	223 (120-250)	277(120-250)	669(120-250)
B <sub>2</sub> -microglobulin (mg/L)	5.13 (1.0-3.0)	2.21 (1.0-3.0)	3.02 (1.0-3.0)
C reactive protein (mg/L)	92.1 (<10.0)	0.5 (<10.0)	135.1 (<10.0)
Albumin (g/L)	25.9 (35.0-52.0)	43.8 (35.0-52.0)	28.6 (35.0-52.0)
Ferritin (ng/ml)	818.5 (23.9-336.2)	101.2 (23.9-336.2)	2244 (23.9-336.2)
PET imaging	BM	CNS, lymph nodes	CNS
CSF	Normal	①nucleated cells 23/ $\mu$ L (<8) ②protein content 69mg/dL (8-43)	①nucleated cells 12/ $\mu$ L (<8) ②protein content 390mg/dL (8-43)
BM biopsy	+	-	-
Hemophagocytic	-	-	+
Other			s CD25 5981IU/ml (<2400) Splenomegaly
The symptom-to-diagnosis interval	4 months	5 months	7 months
Treatment	R-CHOP-MTX- BTKi	R-CHOP-MTX- BTKi	R-CHOP-MTX- BTKi
Response	CR	PD	SD
Follow-up (months)	24	7	3.5
Outcome	Alive	Died	Died

# ***Innovation points***

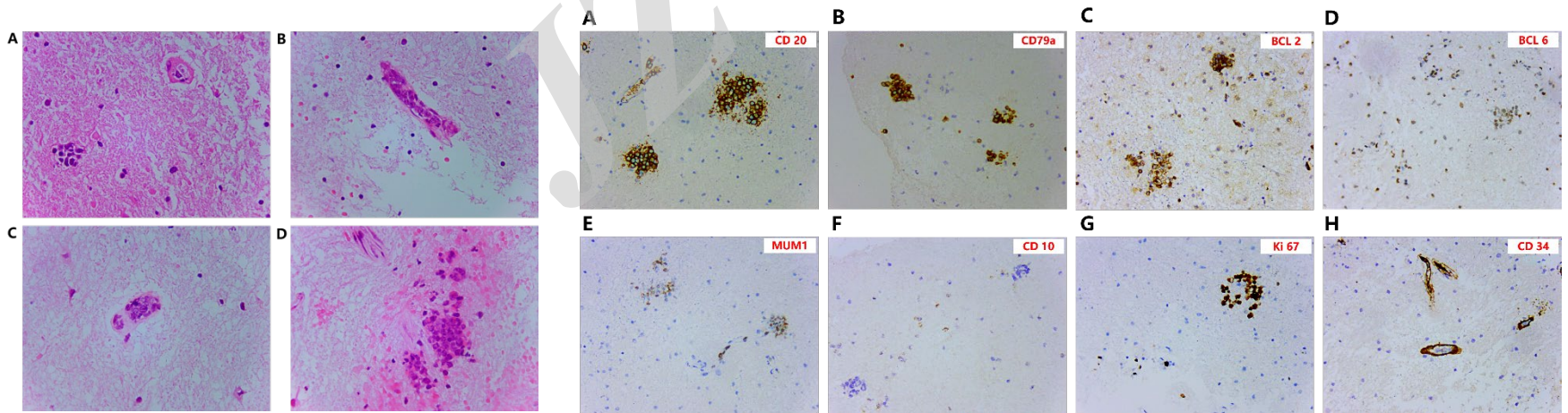
**A series of images and tables demonstrating the pathological and clinical features of IVLBCL cases**

**Figure 1 | Bone-marrow histopathological images of case 1.**

**Figure 2 | *H&E staining of the occipital-lobe lesion in case 3.***

**Figure 3 | *Immunohistochemistry of the occipital-lobe lesion in case 3.***

**Figure 4 | Immunohistochemistry of PD-L1 in case 3.**



# ***Innovation points***

- **Unmet needs**

1. Difficulty in early diagnosis due to its variable clinical presentation and low incidence rate.
2. Prolonged unrecognized and untreated IVLBCL often results in decreased performance status and limited tolerance to chemotherapy.
3. Based on the currently recommended treatment strategies, the clinical outcomes of some IVLBCL patients remains poor, especially in high-risk individual with specific cytogenetic and molecular abnormalities.

# ***Conclusion and Outlook***

- **It is necessary to establish a pathological diagnostic criterion for swift detection, diagnosis, and early treatment.**
- **It is necessary to improve patient prognosis through precise prognostic stratification based on molecular genetics and clinical subtypes.**