



Supplementary Fig. S1 PRISMA flowchart showing screening and inclusion of studies. PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

Supplementary Table S1 Critical appraisal of the included studies using the JBI checklist

Sno.	JBI cross-sectional study	Dote et al	Matsumoto et al	García et al	Saburi et al	Iriyama et al	Castelli et al
1	Were the criteria for inclusion in the sample clearly defined?	Yes	Yes	Yes	Yes	Yes	Yes
2	Were the study subjects and the setting described in detail?	Yes	Yes	Yes	Yes	Yes	Yes
3	Was the exposure measured validly and reliably?	No	Yes	Yes	Yes	Yes	Yes
4	Were objective, standard criteria used for measurement of the condition?	No	Yes	Yes	No	No	No
5	Were confounding factors identified?	Yes	Yes	No	No	No	No
6	Were strategies to deal with confounding factors stated?	Yes	Yes	No	No	No	No
7	Were the outcomes measured validly and reliably?	Yes	Yes	Yes	Yes	Yes	Yes
8	Was appropriate statistical analysis used?	Yes	Yes	Yes	Yes	Yes	Yes

Abbreviation: JBI, Joanna Briggs Institute.

Supplementary Table S2 Case reports of CMV infection after bendamustine–rituximab

S no.	Author	Baseline condition	Age (years)	Gender	B-R cycles	ALC (cells/mm ³)	CMV disease	Outcome
1	Magliano et al ¹	Mantle cell lymphoma	74	Male	5	NA	Lung	Expired
2	Aggarwal et al ²	Mantle cell lymphoma	71	Male	2	600	Gut	Expired
3	Lim et al ³	Follicular lymphoma	71	Female	3	522	Gut	Recovered
4	Schonfeld et al ⁴	Mantle cell lymphoma	74	Male	6	NA	Gut, eye	Recovered
5	Hosoda et al ⁵	Follicular lymphoma	51	Male	3	70	Eye, liver	Expired
6	Iriyama et al ⁶	Mantle cell lymphoma	66	Male	2	78	Gut, liver	Recovered
7	Iriyama et al ⁶	Marginal zone lymphoma	77	Male	2	120	Liver	Recovered
8	Iriyama et al ⁶	Mantle cell lymphoma	76	Female	2	70	Liver	Recovered
9	Iriyama et al ⁶	Follicular lymphoma	69	Female	5	887	Lung	Recovered
10	Iriyama et al ⁶	Follicular lymphoma	72	Female	6	231	Liver, gut, eye	Recovered
11	Chiba et al ⁷	Mantle cell lymphoma	72	Male	3	–	Gut	NA
12	Chiba et al ⁷	Follicular lymphoma	80	Female	2	–	Gut	NA
13	Saburi et al ⁸	Follicular lymphoma	65	Female	4	–	Eye	Recovered
14	Saburi et al ⁸	Follicular lymphoma	54	Male	6	–	Eye	Recovered

Abbreviations: ALC, Absolute Lymphocyte Count.; CMV, Cytomegalovirus.

Supplementary Table S3 Observational studies on infections (including CMV) in patients receiving bendamustine–rituximab

S no.	Author	Type of study	N	CMV infection	CMV disease	Eyes	Gut	Lung
1	Dote et al ⁹	Retrospective	2156	52 (2.4%)	NA	–	–	–
2	Matsumoto et al ¹⁰	Prospective	33	10 (30.3%)	2 (7.4%)	0	0	0
3	García et al ¹¹	Retrospective	11	1 (9.8%)	NA	–	–	–
4	Saburi et al ⁸	Retrospective	34	2 (5.8%)	2 (5.8%)	0	0	0
5	Iriyama et al ⁶	Retrospective	105	6 (5.7%)	1 (1%)	2 (1.9%)	1 (1%)	–
6	Castelli et al ¹²	Retrospective	70	6 (8.6%)	NA	–	–	–

Abbreviation: CMV, Cytomegalovirus.

References

- Magliano G, Cuccaro A, d'Alo' F, et al. Severe CMV infection after chemo-immunotherapy with dose-reduced bendamustine and rituximab in a mantle cell lymphoma old patient. *Mediterr J Hematol Infect Dis* 2021;13(01):e2021054
- Aggarwal A, Cretara A, Ford K, Steingart R, Walker D. Cytomegalovirus reactivation after bendamustine-based chemotherapy: a case report. *Infect Dis Clin Pract* 2021;29(05):e317
- Lim SH, Pathapati S, Langevin J, Hoot A. Severe CMV reactivation and gastritis during treatment of follicular lymphoma with bendamustine. *Ann Hematol* 2012;91(04):643–644
- Schonfeld E, Mone A, Poppers D. A rare case of cytomegalovirus (CMV) gastritis, duodenitis, and retinitis with gastrointestinal bleeding due to non-cirrhotic portal hypertension complicating treatment for lymphoma: case report and review of literature. *Am Coll Gastroenterol* 2016;111:S922
- Hosoda T, Yokoyama A, Yoneda M, et al. Bendamustine can severely impair T-cell immunity against cytomegalovirus. *Leuk Lymphoma* 2013;54(06):1327–1328
- Iriyama N, Miura K, Takahashi H, et al. Clinical entity of cytomegalovirus disease in patients with malignant lymphoma on bendamustine therapy: a single-institution experience. *Leuk Lymphoma* 2023;64(01):171–177
- Chiba A, Nakamura F, Nakazaki K, Kurokawa M. Cytomegalovirus antigenemia and end-organ disease in Japanese patients treated with bendamustine. *Leuk Lymphoma* 2018;59(03):749–751
- Saburi M, Okuhiro K, Yoshida N, et al. Infections associated with bendamustine and anti-CD20 antibody in untreated follicular lymphoma: a real-world study. *J Clin Exp Hematop* 2023;63(03):197–200
- Dote S, Inose R, Goto R, Kobayashi Y, Muraki Y. Risk of a second cancer and infection in patients with indolent B-cell lymphoma exposed to first-line bendamustine plus rituximab: a retrospective analysis of an administrative claims database. *Hematol Oncol* 2023;41(03):354–362
- Matsumoto Y, Kobayashi T, Shimura Y, et al; Kyoto Clinical Hematology Study Group (KOTOSG) Combined rituximab, bendamustine, and dexamethasone chemotherapy for relapsed or refractory indolent B-cell non-Hodgkin lymphoma and mantle cell lymphoma: a multicenter phase II study. *Int J Hematol* 2019;110(01):77–85
- García Muñoz R, Izquierdo-Gil A, Muñoz A, Roldan-Galiacho V, Rabasa P, Panizo C. Lymphocyte recovery is impaired in patients with chronic lymphocytic leukemia and indolent non-Hodgkin lymphomas treated with bendamustine plus rituximab. *Ann Hematol* 2014;93(11):1879–1887
- Castelli R, Bergamaschini L, Deliliers GL. First-line treatment with bendamustine and rituximab, in patients with intermediate-/high-risk splenic marginal zone lymphomas. *Med Oncol* 2017;35(02):15