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Typical hemophagocytic syndrome associated with cytomegalovirus infection in an immunocompetent patient: a case report and literature review

Key words: Cytomegalovirus infection; hemophagocytic lymphohistiocytosis; ruxolitinib; immunocompetent;

Research Summary

- Hemophagocytic syndrome (HLH) is a rare, fatal condition caused by the unchecked activation and proliferation of numerous macrophages, natural killer cells, T lymphocytes, and cytokines. Although viruses are the most frequent triggers, the proportion of cases caused by CMV is small, especially in immunocompetent hosts.
- Here we describe a case of hemophagocytic syndrome associated with CMV infection (HLH-CMV) in a 44-year-old woman without known underlying immunodeficiency, who was successfully treated with ruxolitinib. The goal of this paper is to emphasize the importance of early administration of ruxolitinib in immunocompetent patients with HLH-CMV, which can profoundly improve outcomes.

Key points

- Ruxolitinib is safe and efficient with the adjunction of ganciclovir during hemophagocytic syndrome associated with cytomegalovirus infection.

Results of basic laboratory investigations during hospitalization

Parameter	White blood cell count(X10 ⁹ /L)	Neutrocyte (X10 ⁹ /L)	Lymphocyte (X10 ⁹ /L)	Red blood cell count(X10 ¹² /L)	Hemoglobin (g/L)	Platelet count(X10 ⁹ /L)	Total protein, g/L	Albumin, g/L	AST (U/L)	ALT (U/L)	GGT (U/L)
Day 1	4.8	4.07	0.51	2.9	80	71	48.3	31.6	75	110	197
Day 2	3.3	2.25	0.74	2.01	55	52	..	..	44	..	..
Day 3	2.88	1.86	0.61	1.6	45	38	44.3	27.3	61	75	154
Day 4	1.87	1.14	0.48	1.4	40	30	42.2	23.4	44	56	113
Day 5	3	1.92	0.7	1.81	52	33	44.3	24.8	38	47	98
Day 18	6.03	5.19	0.56	2.5	79	262	51.8	32.7	14	33	89
Standard value	4.0-10.0	2.0-7.0	0.8-4.0	3.68-5.13	113-151	101-320	65.0-85.0	40.0-55.0	13-35	7-40	7-45
Parameter	Soluble CD25, pg/ml	Triglyceride, mmol/L	Total bilirubin (μmol/L)	Direct bilirubin (μmol/L)	LD (U/L)	Fibrinogen, g/L	D-dimer, ug/L FEU	Ferritin, ng/mL	IL-6, pg/ml	IL-10, pg/ml	CRP, mg/L
Day 1	..	..	184.1	149.9	166	2.01	1493	..	..	..	15.82
Day 2	..	..	..	..	1518	..	..	..	..	..	8.67
Day 3	..	2.87	153.7	125.9	..	1.48	1932	222877.7	112.97	270.95	..
Day 4	27519	1.84	93.7	79.8	1803	1.61	1539	..	..	..	21.72
Day 5	..	2	78.9	70.1	1638	1.12	1050	..	..	..	9.5
Day 18	3449	1.57	23.6	20	382	0.9	370	9096.59	3.6	3.68	0.2
Standard value	<6400	0.30-1.70	0.0-21.0	0.0-8.0	120-250	2.00-4.00	0-700	7.0-222.0	0.0-5.30	0.00-4.91	0.00-8.00

Empty cells mean that laboratory investigations were not done.

ALT=alanine aminotransferase. AST=aspartate aminotransferase. CRP=C-reactive protein. GGT=gamma glutamyl transferase. LD=lactate dehydrogenase

The clinical course after admission

