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Images

# Peripheral hemophagocytosis: A rapid clue to severe sepsis and hemophagocytic lymphohistiocytosis

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A 42-day-old girl, born at 36 weeks of gestation with a birth weight of 2.1 kg, was referred to our hospital from a neighboring country with complaints of 10 days of persistent fever, anemia, and severe thrombocytopenia. Initial physical examination findings revealed jaundice and significant hepatosplenomegaly. Vital signs were stable, and no oxygen was required. Complete blood count, after recent red cell and platelet transfusions, revealed hemoglobin 9.0 g/dL, WBC 22.57 $\times$ $10^9$/L, and platelet 11 $\times$ $10^9$/L. The peripheral blood film displayed a leukoerythroblastic picture, atypical lymphocytosis, neutrophils with toxic granulations, and hemophagocytosis (Fig. 1). C-reactive protein level was 194 mg/L. Intravenous meropenem was started on admission. *Serratia marcescens* was later identified from the blood culture. Serum ferritin and triglyceride levels were also elevated (Table 1), thus fulfilling five of the eight diagnostic criteria for hemophagocytic lymphohistiocytosis (HLH). In addition, she had obstructive jaundice, hepatic transaminasemia, and cerebrospinal fluid pleocytosis with negative culture. Treatment with intravenous immunoglobulin was withdrawn when she developed hypotension after the infusion of the first milliliter. No immunosuppressive treatment was used due to her precarious condition. Nevertheless, her condition improved, the bacteremia was eradicated, the cytopenias were resolved, and she started to gain weight of 0.7 kg in the second week. Unfortunately, she died of a catastrophic bleeding 23 days after admission from rupture of an abdominal aortic aneurysm, which might have been mycotic and the primary focus of infection associated with iatrogenic catheterization from the femoral vessels in the referring institution.

Exploring the presence of peripheral hemophagocytosis has been suggested as a rapid method of identifying adult patients admitted to the intensive care with sepsis or systemic inflammatory response syndrome for secondary HLH.[1] The same principle may also be applicable to children and young infants. This finding is important because, unlike primary HLH, the use of immunosuppressive therapy may not be advisable in the presence of severe sepsis and/or SIRS.[2]

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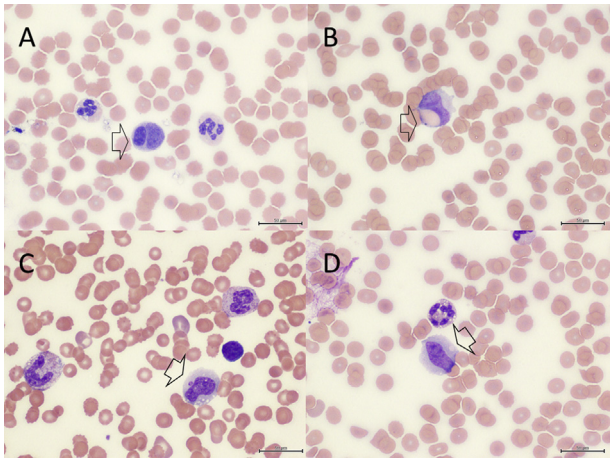


**Figure 1** Photomicrographs of the peripheral blood smear (×100; Wright's). A. Leukophagocytosis by a monocyte. B. Erythrophagocytosis. C. Cytoplasmic nuclear debris and vacuoles in a monocyte. The neutrophils with toxic granulations and Dohlë bodies can be observed. D. Cellular debris inside a monocyte.

**Table 1** Serial laboratory findings.

| | Week 1 | Week 2 | Week 3[a] | Normal range |
|---|---|---|---|---|
| Hemoglobin, g/dL | 9.0 | 13.3 | 11.2 | 10.0—15.0 |
| WBC, × $10^9$/L | 22.57 | 19.56 | 15.16 | 6.00—17.55 |
| Neutrophil, % | 64 | 79 | 61 | |
| Platelet, × $10^9$/L | 11 | 78 | 190 | 140—460 |
| CRP, mg/dL | 194 | 137 | 50 | <10 |
| Bilirubin, μmol/L | 366 | 102 | 85 | <26 |
| Ferritin, mg/mL | 1424 | — | — | 10—268 |
| Triglyceride, mmol/L | 2.60 | 1.44 | — | <1.70 |
| Blood culture | *Serratia marcescens* | Negative | Negative | |

[a] This set of blood test was taken 12 h prior to the child's clinical deterioration.

## Conflict of interest

The authors have no conflicts of interest relevant to this article.

## References

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## Appendix A. Supplementary data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.pedneo.2018.05.004.