Leukoerythroblastic reaction

Raúl Carrillo-Esper,* Amy Bethel Peralta-Prado,⁺Pedro González-Noris,[‡] Anika Silvia Ruiz-Hernández,[§] Adriana Espinoza-García^{||}

LEUKOERYTHROBLASTIC REACTION

A 51-year-old patient without previous medical history was admitted to the hospital with a clinical picture of respiratory distress. During evaluation, presence of bilateral reticulonodular pulmonary infiltrates, right pleural effusion and left ovarian mass with ascitic fluid was documented.

Laboratories showed CA125: 768 U/mL, CA19-9: 1,880 U/mL, CA16-3: 477 nU/L, carcinoembryonic antigen level 1,010 ng/mL and alpha-fetoprotein 1.7 ng/mL. Cell blood count: hemoglobin 10.2 g/dL, leukocytes 15,700 cells/ μ L, platelets 72,000 cells/ μ L, normal ranged reticulocytes and negative Coombs. The peripheral blood smear (PBS) examination revealed erythroblasts (4/100 leukocytes), myelocytes, metamyelocytes, keratocytes, ovalocytes, anisocytosis and mycrocitosis, which are characteristic of a leukoerythroblastic reaction (Figure 1).

Using PBS, leukoerythroblastic reaction is characterized by the presence of immature erythroid cells (erythroblasts), myeloid cells (metamyelocytes and myelocytes), and also erythrocytes with abnormal shapes can be found.¹

Cytometry blood count data varies in every case, usually shows anemia, but this feature is not required for diagnosis; leukocytes and platelets count may be normal, increased or decreased.¹

This reaction is frequently associated to metastatic cancer or hematologic neoplasia. 74% of solid tumors, especially prostate, lung, breast and gastric cancer can present this hematologic finding. It has been associated to non-neoplastic diseases such as hemolytic anemia, Gaucher's disease, politrauma, hypoxia, viral and parasitic infections and tuberculosis.^{2,3}

When leukoerythroblastosis appears in a patient with solid tumor, it is consider as a sign of bone marrow infiltration and disseminated metastatic disease. Also, it can be found in cases with single metastasis. In all



Figure 1. Peripheral blood smear shows leukoerytrhoblastic reaction; with anisocytosis and poikilocitosis, normoblasts (Nb), band cells (B), and erythrocytes with abnormal shapes predominating echinocytes (E), dacriocytes (Dc), schistocytes (S) and microcytes (Mc).

* Academia Nacional de Medicina. Academia Mexicana de Cirugía. Jefatura UTI, Fundación Clínica Médica Sur.
[†] Residencia Medicina Interna, Hospital General Dr. Manuel Gea González. [‡] Residencia Anestesiología, Hospital General de Mexicali.
[§] Residencia Medicina Interna. Fundación Clínica Médica Sur.
[§] Estudiante de Medicina.

Correspondencia: Dra. Amy Peralta-Prado Servicio de Medicina Interna, Hospital Dr. Manuel Gea González Correo electrónico: amydeidd@yahoo.com.mx these situations, it is considered an independent poor prognosis factor.³

One of the most severe hematologic manifestations is the presence of microangiopathic hemolytic anemia, in which tumoral cellular destruction from carcinomas, sarcomas, lymphomas and leukemia, causes arteriolar and capillary obstruction, generating hemolysis, showing fragmented erythrocytes and thrombocytopenia during the PBS.^{2,3}

REFERENCES

- Shamdas GJ, Ahmaim FR, Matzner MB, Rifchie JM. Leukoerythroblastic anemia in metastatic prostate cancer. *Cancer* 1993; 71: 3594-600.
- Delsol G, Guiu-Godfrin B, Guiu M, Pris J, Corberand J, Fabre J. Leukoerythroblastosis and cancer frequency, prognosis and physiopathologic significance. *Cancer* 1979; 44: 1009-13.
- George JN. Systemic malignancies as a cause of unexpected microangiopathic hemolytic anemia and thrombocytopenia. Oncology (Williston Park) 2011; 25(10): 908-14.