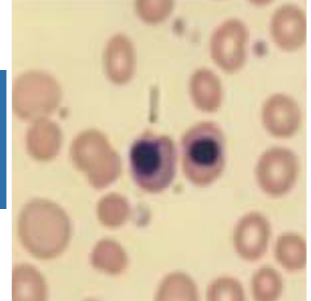


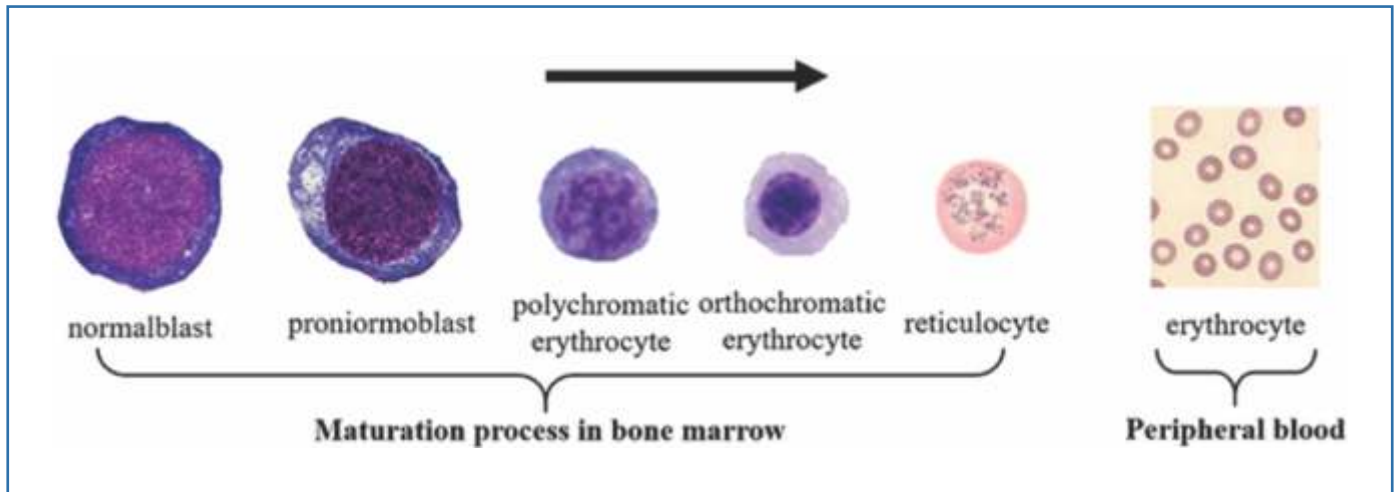
Investigation Corner



NORMOBLASTEMIA – IS IT A BIOMARKER OF OUTCOME IN SEPSIS?

- **Nucleated RBC (NRBCs)** are red blood cells with a nucleus and the presence of nucleated red cells in peripheral blood is called **normoblastemia**.
- The nucleus, which contains DNA, should eject naturally as the cell develops in the bone marrow.
- When the nucleus has dissolved, the cell becomes more flexible and is able to exit the bone marrow.
- The empty space in the cell then fills up with hemoglobin, an important protein which carries oxygen to tissues, and carries carbon dioxide back from tissues to the lungs to be breathed out.
- The normal reference range for **nucleated red blood cell** is 0 nucleated RBC/100 WBC.
- Even a count as low as 1/100 is abnormal and should be investigated.
- The only time nucleated RBC is normal in humans is in fetuses and in infants for up to five days after birth especially in cases of hypoxia..
- Their presence in the blood is pathological and means disruption of the blood-bone marrow barrier or increased red blood cell production outside the bone marrow
- Some of the possible causes of NRBCs in the blood include anemia, low oxygen, spleen dysfunction, and bone marrow damage and disorders. You can reduce NRBCs by addressing the underlying cause.
- In a study of 421 adult intensive care patients, the in-hospital mortality rate was 42% in those with peripheral NRBCs vs 5.9% in those without them
- In adults with acute respiratory distress syndrome, the finding of any NRBCs in the peripheral blood was an independent risk factor for death, and an NRBC count higher than 220 cells/ μ L was associated with a more than 3-fold higher risk of death
- Surgical sepsis patients with detectable NRBCs are at higher risk of ICU and in-hospital death than those with non-detectable NRBCs.
- The mortality difference is underscored in surgical patients with severe sepsis.
- This suggests NRBCs may be a biomarker of outcomes in patients with surgical sepsis and also in adult intensive care patients.

Reference: Stachon A, Holland-Letz T, Krieg M In-hospital mortality of intensive care patients with nucleated red blood cells in blood. Clin Chem Lab Med 2004; 42(8):933–938. doi:10.1515/CCLM.2004.151 This study s



Dr. K. Chandramouleswari
Professor and HOD, Central laboratory, TNGMSSH