1. List three factors that would contribute to artefact in peripheral blood smears
   1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What is the cause of elevated Lactate hydrogenase (LDH) and indirect bilirubin In Megaloblastic anemia?

a\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Describe the use of whole blood zinc protoporphyrin (ZPP) micromethod in the differential diagnosis of microcytic anemia

a\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Regarding the morphologic finding of schistocytes on peripheral blood smear
   1. List two differential diagnosis

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. b.
2. List 6 conditions associated with presence of Macrocytic Anemia

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. With regard to Genetic aberrations and survival in chronic lymphocytic leukemia. List 1 abnormality with relative good prognosis?
2. What cytogenetic abnormalty defines CML

Answer

* 1. Slide preparation 4 hours after the blood is drawn
  2. Partially filled Lavender tube
  3. The use of Citrated as an anti-coagulant

The preferred specimen for preparing blood films is EDTA anticoagulated blood. The EDTA tube should be well filled. If the tube is only partially filled, the relative excess of EDTA can result in artifacts even if a film is prepared promptly. Prolonged storage is another significant source of blood film artifacts. The film should always be made within 2–4 hours after the blood is drawn.

1. a. Lactate hydrogenase (LDH) and indirect bilirubin levels are increased due to intramedullary hemolysis. The LDH is usually markedly increased in severe megaloblastic anemia.
2. the ZPP became elevated before the development of anemia and may be one of the earliest indicators of iron deficiency
3. The presence of schistocytes suggests the differential diagnosis of:
   1. DIC VS. TTP, mechanical heart valve
   2. clinical features & D-Dimer test, PT, PTT, fibrinogen, in patients with schistocytes will lead to correct diagnosis.
4. List 4 conditions associated with presence of Dacrocytes
   1. Myelofibrosis
   2. Metastatic tumor in the bone marrow
   3. Megaloblastic anemias
   4. thalassemia major
   5. Acute leukemias
   6. Multiple myeloma
5. With regard to Genetic aberrations and survival in chronic lymphocytic leukemia. List 2 abnormalities with adverse prognosis?
   1. 11q deletion (13 months)
   2. 17p deletion (9 months)

References

1. Diagnosis from the Blood Smear

Barbara J. Bain, F.R.A.C.P., F.R.C.Path. N Engl J Med 2005;353:498-507

1. WHO Classification of Tumours of Haematopoietic and Lymphoid Tissue 4th edition, Lyon: IARC; 2008

S. Swerdlow, E. Campo, N. Lee Harris, E.S. Jaffe, S.A. Pileri, H. Stein, J. Thiele

1. Henry's Clinical Diagnosis and Management by Laboratory Methods, 21st ed. 2006 W. B. Saunders Company. Richard A. McPherson, MD and Matthew R. Pincus, MD PhD
2. The 2008 revision of theWorld Health Organization (WHO) classification of myeloid neoplasms and acute leukemia: rationale and important changes:

James W. Vardiman, Jüergen Thiele, Daniel A. Arber, Richard D. Brunning, Michael J. Borowitz, Anna Porwit, Nancy Lee Harris, Michelle M. Le Beau, Eva Hellström-Lindberg, Ayalew Tefferi and Clara D. Bloomfield

1. Acute Leukemia Immunohistochemistry: A Systematic Diagnostic Approach. Arch Pathol Lab Med. 2008;132:462–475

Randall J. Olsen, MD, PhD; Chung-Che Chang, MD, PhD; Jennifer L. Herrick, MD; Youli Zu, MD, PhD; Aamir Ehsan, MD