

Photoclinic

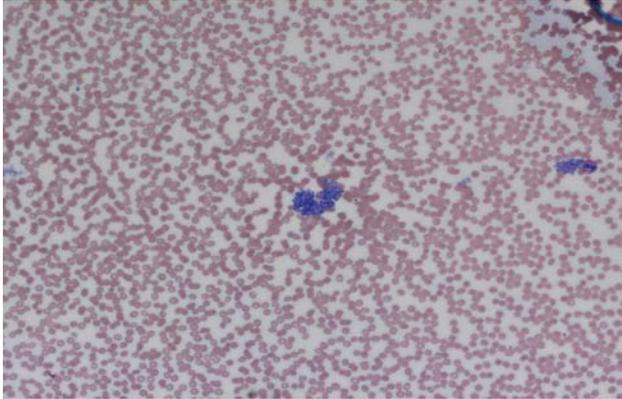


Figure 1. Platelet clumps (Wright-stained peripheral blood smear X 400 magnification)

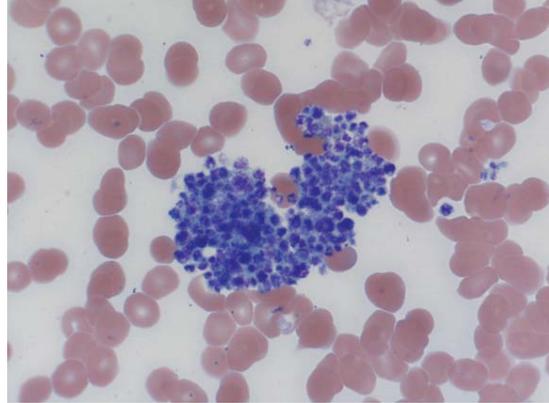


Figure 2. Platelet clumping (Wright-stained peripheral blood smear X 1,000 magnification)

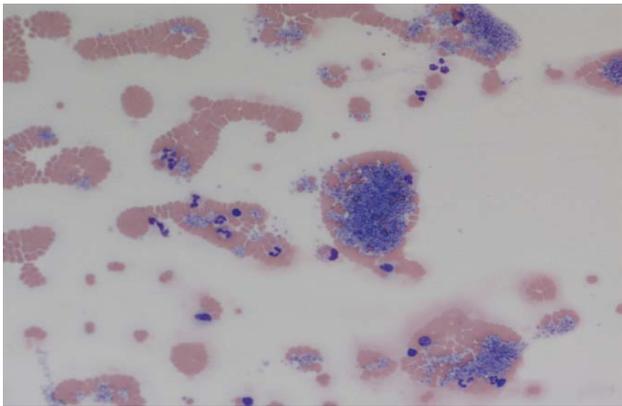


Figure 3. Several platelet clumps at the edge of blood smear (Wright-stained peripheral blood smear X 400 magnification)

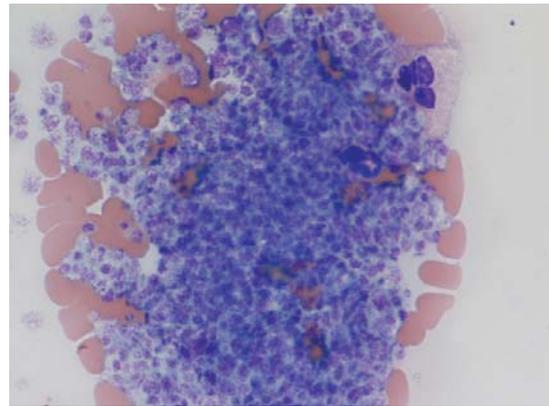


Figure 4. Massive platelet clumping (Wright-stained peripheral blood smear X 1,000 magnification)

Cite this article as: Nathenson MJ, Emadi A. Photoclinic. *Arch Iran Med.* 2014; **17(11)**: 789 – 790.

A 61-year-old male with history of cirrhosis due to chronic hepatitis C resulting in portal hypertension and splenomegaly as well as a history of chronic thrombocytopenia (range 89 – 144/nL) presented with a thoracic aortic arch pseudoaneurysm necessitating surgical repair. On presentation, a palpable spleen tip was noted, white blood cell count was 5.9/nL, hemoglobin was 13.0 g/dL, and

platelets were 22/nL. Due to a significant drop in platelet count from the baseline, the surgery was delayed to investigate the etiology of thrombocytopenia. The patient denied any history of mucosal, gastrointestinal or genitourinary bleeding. Peripheral blood smear revealed platelet clumping (Figures 1 – 4) consistent with the diagnosis of pseudothrombocytopenia.

Michael J Nathenson MD¹, Ashkan Emadi MD PhD¹

Author's affiliations: ¹ University of Maryland Greenebaum Cancer Center, Baltimore.

•Corresponding author and reprints: Ashkan Emadi MD PhD, University of Maryland Greenebaum Cancer Center, 22 S. Greene Street, N9E24, Baltimore, MD 21201. Tel: 410-328-2596, Fax: 410-328-6896, E-mail: aemadi@umm.edu. Accepted for publication: 22 August 2014

**What is your diagnosis?
See the next page for your diagnosis.**

Photoclinic Diagnosis: Platelet Clumping in a Cirrhotic Patient with Pseudothrombocytopenia

Platelet clumping results in pseudothrombocytopenia and is rarely observed when blood is exposed to the calcium chelator, Ethylenediaminetetraacetic Acid (EDTA). It occurs after conformational changes in the glycoprotein IIb/IIIa complex on platelet membranes mediated by EDTA. The modified epitopes of this glycoprotein complex interact with both IgG and IgM anti-platelet autoantibodies, which culminates in large platelet agglutination. EDTA-induced pseudothrombocytopenia is seen in healthy individuals; however, it is more common in chronic liver disease, infectious mononucleosis (cold agglutinin), and other viral infections including human immunodeficiency virus (HIV), rubella, and cytomegalovirus (CMV). To confirm this phenomenon, blood is re-collected into a tube containing sodium citrate and platelet count is re-measured, as occurred in this patient, which shows a

return to the baseline level. This case underscores the importance of reviewing peripheral blood smears for all patients with thrombocytopenia even in the presence of splenomegaly and chronic liver disease.

References

1. Chae H, Kim M, Lim J, Oh EJ, Kim Y, Han K. Novel method to dissociate platelet clumps in EDTA-dependent pseudothrombocytopenia based on the pathophysiological mechanism. *Clin Chem Lab Med.* 2012; **50**: 1387 – 1391.
2. Lippi G, Plebani M. EDTA-dependent pseudothrombocytopenia: further insights and recommendations for prevention of a clinically threatening artifact. *Clin Chem Lab Med.* 2012; **50**: 1281 – 1285.
3. Hsieh AT, Chao TY, Chen YC. Pseudothrombocytopenia associated with infectious mononucleosis. *Arch Pathol Lab Med.* 2003; **127**: e17 – e18.