INTRODUCTION- Thrombocytopenia is the most common cause of bleeding. Thrombocytopenia occurs due to many reasons main are: artificial thrombocytopenia, deficient platelet production, increased platelet destruction and abnormal distribution or pooling within the body.

Pseudothrombocytopenia is a condition in which there is falsely lowered platelet count in patients who have no signs of bleeding, like petechiae or ecchymoses. Artificial thrombocytopenia is falsely low platelets, platelets are not counted properly and accurately and the most common cause being platelet satellitism and giant platelets.

It is caused by anticoagulant dependent agglutinins. These agglutinins are IgG, IgA and IgM immunoglobulins subtype which should be considered in patients who have thrombocytopenia but the absence of any signs of bleeding. Artifactual thrombocytopenia is falsely lowered platelet count. EDTA anticoagulant can cause platelet clumping and if the platelet count is falsely lowered due to EDTA, it is called Pseudothrombocytopenia (PTCP).

MATERIAL AND METHOD- This study was performed in the haematology department of the central laboratory of the NIMS medical college and hospital, Jaipur. All OPD and IPD patients whose CBC sample came with low platelet count and with clumping or aggregates on peripheral blood smear were selected. Samples of same patient were taken for further examination using alternative anticoagulant like sodium citrate and heparin.

RESULTS— A total of 50 patients within the age group of 20 to 70 years were selected who has pseudothrombocytopenia. EDTA anticoagulated blood sample has platelet count in the range of 20x10^9 /l to 194x10^9 /l and samples from same patient anticoagulated with citrate has platelet count in the range of 41x10^9 /l to 312x10^9 /l and heparin anticoagulated sample has platelet count in the range of 29x10^9 /l to 210x10^9 /l. Platelet counts decreased dramatically in EDTA anticoagulated samples as compared to citrate and heparin anticoagulated samples post four hour of collection.

Conclusion: Manual microscopic examination of the peripheral blood films should be done in every case with low platelet count for platelet clumping or aggregation, or in isolated thrombocytopenia flagged in hematology analyser. Alternate anticoagulant must be used for accurate platelet count and precise diagnosis.

KEYWORDS: Artificial thrombocytopenia, thrombocytopenia, EDTA, anticoagulant
EDTA-PTCP is an in-vitro phenomenon due to formation of antiplatelet antibodies that cause platelet clumping in blood. In this study EDTA-PTCP was diagnosed by examination of peripheral blood film for microscopic platelet aggregates or clumping in patients with low platelet count on Coulter cell counter.

EDTA-PTCP was diagnosed and confirmed by seeing platelet aggregates in smears in different literatures as well.1-15 In this study, PTCP diagnosed from EDTA anticoagulated samples showed lower platelet count than samples anticoagulated with citrate and heparin. Samples anticoagulated with Citrate show higher platelet count than heparin anticoagulated samples. Werner et al found that citrate is superior to EDTA anticoagulant to reduce PTCP.16 Pullen et al found that EDTA-PTCP was seen more commonly in females rather than in males with female: male ratio of 3.28. A higher incidence of PTCP was seen in females in this study as well.

The mean platelet count in EDTA- anticoagulated blood of individuals with PTCP was lower in comparison to citrate- anticoagulated and heparin-anticoagulated samples with PTCP. Literature shows that mean platelet count was increased in samples anticoagulated with magnesium sulphate than in EDTA samples.16

**CONCLUSION:** Peripheral blood films should be examined for platelet clumping/aggregation in cases which shows no clinical signs of thrombocytopenia or in isolated thrombocytopenia flagged in hematology analyser. Alternative anticoagulants should be used for correct estimation of platelet count and to exclude EDTA induced PTCP in order to prevent unnecessary testing and expenditure of the patient.

**REFERENCES:**

It has been postulated that cation chelation by EDTA leads to a conformational change (changes in shape and size and, acquire more spheroid shape) of the platelet membrane GPIIb-IIIa complex and unmasking of cryptic epitope. This becomes accessible for autoantibodies and causes platelet clumps. Hematology analyzers count the resulting platelet clumps as single giant platelets or as small lymphocytes in the white blood cell gate and indicate thrombocytopenia. EDTA anticoagulation also leads to time dependent changes of mean platelet volume (MPV).10-11

Recently it has been proposed that EDTA-induced platelet clumps can be dissociated by a mixture of calcium chloride for reassociation of glycoprotein (GP) IIb/IIIa complex and sodium heparin for maintaining anticoagulation to correctly estimate platelet counts.10,11 The addition of an aminoglycoside antibiotic (e.g kanamycin) has similarly been used to count platelets in cases of PTCP,14 Gschwandtner et al referred PTCP as a “laboratory disease” and Schrenzenmeir et al proposed that the phenomenon of in vitro-platelet aggregation should be collectively called as anticoagulant induced PTCP15.