PLATELET CLUMPING- EDTA INDUCED

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PURPOSE

To provide instructions for obtaining accurate Hemogram results when platelet clumps or satellitosis are present.

BACKGROUND

EDTA platelet clumping or satellitosis may adversely reduce the platelet count, while elevating the WBC count from the hematology analyzer. Accurate results may be obtained by vortexing the specimen and/or recollecting the specimen with Sodium Citrate anticoagulant.

RELATED DOCUMENTS

R-W-HEM-1421	Platelet Count Estimates
M-PO-HEM-1438	CBC Review Criteria- LH Analyzers
J-PO-HEM-1577	DXH- CBC Review Criteria
M-W-HEM-1320	LH Cellular Interference
J-W-HEM-1581	DXH WBC Interference
M-W-HEM-1578	CBC Table of Interferences

SPECIMEN

- EDTA whole blood sample
- Sodium citrate whole blood

EQUIPMENT/SUPPLIES

- Specimen glass slides
- Wood applicator sticks
- Vortex

STEPS

1. Cycle the EDTA sample on the analyzer and review results for indications of platelet interference. For example ‘R” flags on PLT and WBC results, incomplete computations, cellular interference or abnormally decreased platelets as compared to previous results.

2. Check the specimen for clots using a wooden applicator stick. If a specimen is clotted, have the specimen recollected in EDTA and in Citrate if possible.

3. Place the specimen on the Vortex mixer on the highest setting, for 1-2 minutes and allow bubbles to subside and rerun on the analyzer. Prepare a smear for review on the post-vortex specimen.

4. Review the stained slide for clumping or satellites. Be sure to check the feathered edge of the smear.

5. Perform a platelet and/or WBC estimate.

6. If the platelet count increases by greater than 10%, is not flagged, and the results are consistent with the slide estimate, the platelet results (and/or WBC) may be reported from the post-vortex run.

7. If the platelet count increases by less than 10%, flagging or clumping persists, and/or results do not correlate with the slide estimate, recollect the specimen in a Sodium Citrate tube and a warmed EDTA tube. Arrange to have the specimens delivered to the lab promptly. Proceed to step 9.

8. If unable to recollect:
    a. Delete the platelet count and add a chartable comment to the platelet result line using the LIS phrase "BKRCLUMP" [Unable to report platelet count due to platelet clumping].

    b. Delete the MPV result and add a chartable comment to the MPV result line [Unable to report result due to platelet clumping].

    c. Enter additional comments to provide an estimate of the platelet count as observed from slide review. Use the LIS phrase "PLTMORPH" or "BKRPLTEST" and use F2 to open list and double click your selection from the choices below:
        - Platelets appear adequate
        - Platelets appear decreased
        - Platelets appear increased
        - Platelets appear markedly decreased
        - Platelets appear markedly increased
        - Platelets appear slightly decreased
        - Platelets appear slightly increased

Testing the warmed EDTA sample

9. Cycle the warmed EDTA sample through the analyzer. Prepare and stain a slide and perform a platelet and/or WBC estimate. If the analyzer platelet count is not flagged and matches the estimate, the platelet count may be reported.

10. If the warmed EDTA sample did not resolve the problem, cycle the Sodium Citrate sample through the analyzer. (Do not use the exact accession/instrument ID number to identify sample, in order to avoid autoverification). Proceed to step 11.

Testing the Sodium Citrate sample

11. **On the LH750:**
    a. Correct for the anticoagulant dilution in the Sodium Citrate tube by pre-setting the dilution to 1.1 on the workstation and run the sample. The PLT result will be corrected for the dilution. If the pre-dilute function is NOT used, PLT result must be manually multiplied by the dilution factor 1.1 to obtain the correct reportable result. Only the corrected PLT count may be reported.
    EXAMPLE: PLT: 237 X 1.1 = 261
    b. Do not report indices from the Sodium Citrate tube. Report from the EDTA tube.

On the DXH/SYSMEX XN:

a. There is no pre-dilute function. The PLT result must be manually multiplied by 1.1 for the correction. Only the corrected PLT count may be reported. Other parameters have not been validated by the manufacturer.
b. Do not report indices from the Sodium Citrate tube. Report from the EDTA tube.

12. If the results are not flagged, the corrected PLT result may be reported from the Sodium Citrate tube.

13. If the citrated anticoagulant/warmed EDTA did not correct the platelet clumping, report the platelet result as previously indicated in Step 8 above.

14. The other parameters, differential, WBC morphology and RBC morphology are always performed using the EDTA specimen.

PROCEDURAL NOTE

Platelet clumping may cause a falsely elevated WBC count; therefore, a WBC slide estimate should be performed to verify the accuracy.

REFERENCES

1. Cornett, Larry. Letter to the Editor, MLO, March 1986.
2. Onder, O., Weinstein, A., and Hoyer, L.W. Pseudothrombocytopenia caused by platelet agglutinins that are reactive in blood anticoagulated with chelating agents. BLOOD 56:177-182, 1980.
3. Pierre, Robert. Seminar and Case Stueide—The Automated Differential. Coulter Electronics, 1985.
4. Ilch, Marie. Platelet Clumping and Platelet Satellitism, SHMC. 1988.
5. Hematology Procedures for Abnormal Bloods, Beckman-Coulter Manual, Procedure 5, pp. 5.10-5.12.