LETTERS TO THE EDITOR

DOI: 10.4274/tjh.galenos.2024.2023.0399

Epithelial Cells or Vascular Smooth Muscle Cell in Peripheral Blood Smear?

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October 29, 2023
January 4, 2024

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To the Editor,

We read Lee’s paper [1] with great interest who reported rare epithelial cells in peripheral blood smear in a 56-year-old male. In this blood smear, a few clusters of medium-to-large cells containing elongated oval-grooved nuclei with pale-blue frayed cytoplasm at both ends were found at the tail-end of the blood smear. The author reasoned that these cells were likely epithelial cells and reported as non-hematopoietic cells. Then the author discussed that the presence of these abnormal cells may be due to improper mixing before aspiration, or due to a blunted tip needle used or from repeated unsuccessful venipuncture attempts, and these abnormal cells can also be rarely seen from finger or heel prick due to transference of skin into the blood tube.

However, confirmation of epithelial cells should be validated by immunohistochemistry, and this study also did not mention the venipuncture status for this patient. As we know, alcohol disinfection is mandatory before the venipuncture. Thus, the transference of skin into the blood tube is rare. Thus, we propose other possible causes of these abnormal cells in Lee’s paper [1], including vascular smooth muscle cells, subcutaneous fibroblasts, or even the synoviocytes around the elbow joint (venipuncture on the synovium of the elbow joint). However, whether these cells had the cluster feature is unclear, or needs other immunohistochemistry methods to corroborate.

Additionally, these abnormal cells in Lee’s blood smear [1] also look like vascular endothelial cells. Vascular endothelial cells have a highly irregular cell morphology, mostly in the shape of a long tail or spindle with intact cell membranes, irregular nucleus and often lack nucleoli. However, the vascular endothelial cell could be excluded in this study from our perspective. Because vascular endothelial cells are often arranged in a single-layer lining and sparse, regardless of whether they are brought out by vein or bone marrow puncture. Single or several endothelial cells have a certain trend of arrangement, which is inconsistent with the cell cluster feature in this study.

Lastly, we appreciate Lee’s paper [1] giving us a great opportunity to discuss these rare abnormal cells we could meet in the hematology examination although it is very rare.

Keywords: Epithelial cells; Vascular smooth muscle cell; Peripheral blood smear
Reference
Lee PEN, Chen GY, Yap ES. Epithelial Cells in Peripheral Blood Smear. Turkish journal of haematology: official journal of Turkish Society of Haematology 2023.

Reply:

Dear Editor,

We would like to thank the authors for their insights and comments on our article and would like to offer some additional points for consideration.

Firstly, the authors propose that the abnormal cells observed in our study could be vascular smooth muscle cells, subcutaneous fibroblasts, or synoviocytes around the elbow joint, suggesting that these cells might be the source of the observed anomalies. While the suggestions are valid and should be considered, the presence of these cell types in a peripheral blood smear are extremely rare. To confirm their identity, as the authors' have rightly point out, further immunohistochemistry methods should be employed to corroborate their origin. However, it is crucial to acknowledge that in our paper, we did not definitively identify these cells as epithelial cells but rather suggested them as a possibility. The authors' suggestions offer alternative avenues for investigation but do not definitively rule out the possibility of epithelial cells.

Furthermore, it is noteworthy that the authors raise the issue of venipuncture status and alcohol disinfection as important factors that can influence the presence of foreign cells in a blood smear. Proper venipuncture technique and disinfection are essential aspects of the procedure, and they significantly reduce the risk of contamination. Nevertheless, it is not entirely inconceivable that, despite following correct procedures, rare instances of contamination might occur. While the chances of transference of skin into the blood tube are indeed minimal, it is not entirely impossible, and we acknowledge this possibility.

In conclusion, the comments raised highly valid alternative hypotheses and provided further discussion for the presence of abnormal cells in the blood smear.