Peripheral Smear (PS) examination still remains a cornerstone and first step towards diagnostic work-up of patients. However, presence of artefacts in PS can sometimes prove perplexing for the pathologists [1]. In one such experience, early morning blood sample in K2-EDTA vial of a 23-year-old female was sent to hematology lab. Prepared PS revealed numerous extracellular, elongated, slender eosinophilic ‘flagellated’ structures measuring 4-5 µ, closely mimicking trypanosomes, but looking like miniature forms! With nondiscernible kinetoplasts (Figure 1A,B,C). Her hemoglobin was 11.5 g/dL, total leukocyte count 14.2 x 10⁹ /L and platelet count was 381 x 10⁹ /L. She presented with abdominal distention, mild icterus and had mildly elevated total and direct bilirubin. There was no history of thrombocytopenia or fever and blood loss.

Three pathologists studied the smear, and their consensus that these structures were much smaller than the usual 10 µ size of trypanosomes [2], led to request for a repeat fresh blood sample. On repeat smear, these structures turned out to be normal round to oval platelets! (Figure 1D).
The patient was diagnosed eventually with choledochal cyst of liver with no evidence of any parasitic infection. Extensive smearing can cause platelet elongation, giving them a trypanosome-like appearance, which could be one of the contributing factors. Also, few studies suggested platelet morphogenesis takes place in plasma exhibiting platelets at various stages of maturation ranging from elongated proplatelets to curved fusiform disk shaped platelets which again can be mistaken for flagellated forms [3,4].

Various work on animal models stated platelets gets slightly activated by contact with the glass slide during smearing (as is common in feline samples) can acquire stellate form with dendritic processes [5].

According to Behnke’s hypothesis proplatelets appeared in plasma in a circadian rhythm, particularly during a few hours after sunrise in human blood. In this patient also, early morning sample showed elongated and spindled forms of platelets but repeat late morning sample was devoid of these flagellated forms [4].

Our observation emphasises the need for the pathologist to be aware of possible artefacts on PS. Each smear must be meticulously reviewed keeping in mind the clinical scenario and the limitation of the procedure, to avoid a misdiagnosis.

Declarations

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms.

Financial support and sponsorship: Nil.

Conflicts of interest: There are no conflicts of interest.

References


