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Case Report

CASE REPORT

Case of acquired or pseudo-Pelger-Huët anomaly

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Abstract

Pelger-Huët anomaly (PHA) is a rare benign autosomal-dominant anomaly with an incidence of ~1 in 6000. It does not cause neutrophilia, but it can cause a false increase in band forms. It should be differentiated from acquired or pseudo-Pelger-Huët anomaly (PPHA), which has similar morphology, however; it is associated with different pathological states like Myelodysplastic syndrome, as well as with certain infections and drugs. We report a case of a 67-year-old Caucasian gentleman with past medical history of rheumatoid arthritis, type II diabetes mellitus and hypothyroidism, who presented with 1 day history of fever (101°F) and night sweats. Medications include ibuprofen, methotrexate, hydroxychloroquine and levothyroxine. Patient denied any other symptoms. His work-up showed normal WBC count (8.6) and increase in bands (24%). The patient was admitted for further evaluation. During the next 2 days, the patient did not have any fever or any new symptoms. Peripheral blood smear was done as part of his work-up for bandemia, showed findings suggestive of PHA. Ibuprofen was discontinued. Follow-up few weeks later showed normal blood smear. Diagnosis of PPHA was made. The presented case showed that we should think of PHA \PPHA in any case with normal total WBC count and significant shift to the lift with no apparent explanation. Looking at smears directly under the microscopes is crucial to make diagnosis.

INTRODUCTION

Pelger-Huët anomaly is rare benign autosomal-dominant anomaly with incidence of about 1 in 6000. Pelger-Huët cells are morphologically abnormal neutrophils. It does not cause neutrophilia, but it can cause an increase in band forms [1, 2]. It should be differentiated from acquired or pseudo-Pelger-Huët anomaly (PPHA), which has similar morphology, however; it is associated with different pathological states like Myelodysplastic syndrome [3], as well as with certain infections and drugs [4].

CASE REPORT

A 67-year-old Caucasian gentleman who presented to ED with 1 day history of fever and night sweats. His review of systems otherwise were negative. Past medical history was significant for rheumatoid arthritis, type II diabetes mellitus and hypothyroidism. Medications include ibuprofen 600 mg po every 6 hours, methotrexate 20 mg every week, hydroxychloroquine 200 mg twice daily and levothyroxine 175 μg once a day.

Physical examination on admission showed temperature 97.8°F, pulse 80 per minute, thick hands without joint swelling and otherwise unremarkable examination. Lab studies showed normal WBC with 84% neutrophils and an increase in bands. ESR (38), CRP (7.3), urinalysis and chest X-ray were normal. The patient was admitted to the hospital with impression of possible sepsis. Over the course of 2 days in the hospital he was afebrile and had no new signs or symptoms. His bands normalized. A peripheral blood smear done showed normal mature chromatin condensation and normal granulation, 20% of the neutrophils show bi-lobed nuclei with a thin filament connecting the lobes also known as Pelger-Huët cells. (Figs. 1 and 2). The remaining

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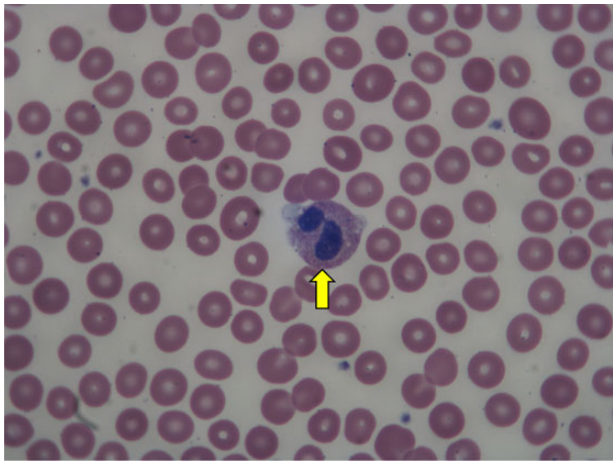

Figure 1: Pseudo-Pelger-Huët cells, hyposegmentation of the neutrophil nucleus and excessive chromatin clumping.

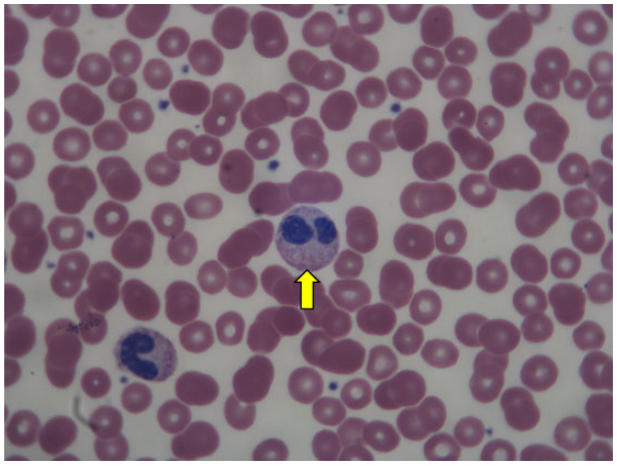

Figure 2: Pseudo-Pelger-Huët; neutrophils show bi-lobed nuclei with thin filament (in the center) and the indented or bilobed variant without thin filament (lower left)-this form is commonly misinterpreted as bands.

80% of the neutrophils also showed bi-lobed nuclei but without thin filament. With the impression of pseudo Pelger Huet abnormality secondary to ibuprofen, his ibuprofen was discontinued. On follow-up visit after discharge,his repeat Peripheral blood smear showed normal neutrophil morphology and the diagnosis of pseudo Pelger Huet abnormality secondary to ibuprofen was confirmed.

DISCUSSION

Normally blood smear shows neutrophils with three to four segments in nuclei in 70–75%, two segments in 15–20%, more than four in 5% and nuclei without any segmentation in around 3–5% [5].

Pelger-Huët is an inherited anomaly with autosomal-dominant pattern. It is a benign condition. The hallmark is neutrophils with dumbbell-shaped bilobed nuclei- also known as pince nez pattern, a reduced number of nuclear segments, and coarse clumping of the nuclear chromatin. The overall cell size, appearance of cytoplasm and staining quality of granules in PHA cells are similar to normal mature neutrophils [5].

A genetic defect in the lamina B-receptor which is usually presents on chromosome 1q41-43 is responsible for the abnormal trafficking of the heterochromatin and nuclear lamins which are scaffolding proteins that control the shape of the nuclear membrane that leads to the morphological abnormality in Pelger-Huët anomaly.

Cells with Pelger-Huët anomaly still have a normal life span without any effect on their phagocytizing and killing functions [6, 7].

An acquired neutrophil dysplasia similar to PPHA also characterized by hyposegmentation of the neutrophil nucleus and excessive chromatin clumping has been described in hematological diseases and in some clinical situations, especially under the effect of certain drugs like tacrolimus; ganciclovir; co-trimoxazole; itraconazole fludarabine; rituximab, citalopram and lorazepam [4]. Most of the cases of PPHA caused by medications have neutrophils with more homogeneous unilobed nuclei. [4], however; it can be bilobed as shown by our case. (Figs. 1 and 2). Distinguishing this benign acquired or autosomal-dominant type from other acquired or pseudo-Pelger-Huët anomaly PPHA observed in individuals with myelodysplasia, myeloid leukemia and bi-lineage acute lymphocytic leukemia is necessary given the fact that recent case reports included the misinterpretation of PHA\PPHA as a possible myeloproliferative disorder, leading to unnecessary investigations which may include bone marrow procedures [8]. PPHA can also be associated with myelodysplastic syndrome, myeloproliferative diseases, acute mylelod leukemia, HIV, TB and mycoplasma [9]. There is no reported association between RA, DM II and hypothyroidism, L-thyroxin, hydroxychloroquine, methotrexate and PPHA in literature. In addition what support our assumption of the possible relationship between ibuprofen use and PPHA is the return of the blood smear to it is normal after the discontinuation of Ibuprofen. Moreira *et al.* [10] and Deutsch and Mandell [11] have also described cases of PPHA attributed to ibuprofen use.

One should think of PHA\PPHA in any case with normal total WBC count and significant shift to the left with no apparent explanation. Our case also emphasizes the importance of using direct microscopy to examine peripheral smear instead of using automated hematology. A peripheral smear examination and awareness of drug-induced PPHA on the part of clinicians can prevent extensive work-up for bandemia in cases of PPHA.

CONFLICT OF INTEREST STATEMENT

None declared.

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