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Pseudo Pelger-Huet Anomaly in Patients with Treated Chronic Lymphocytic Leukemia

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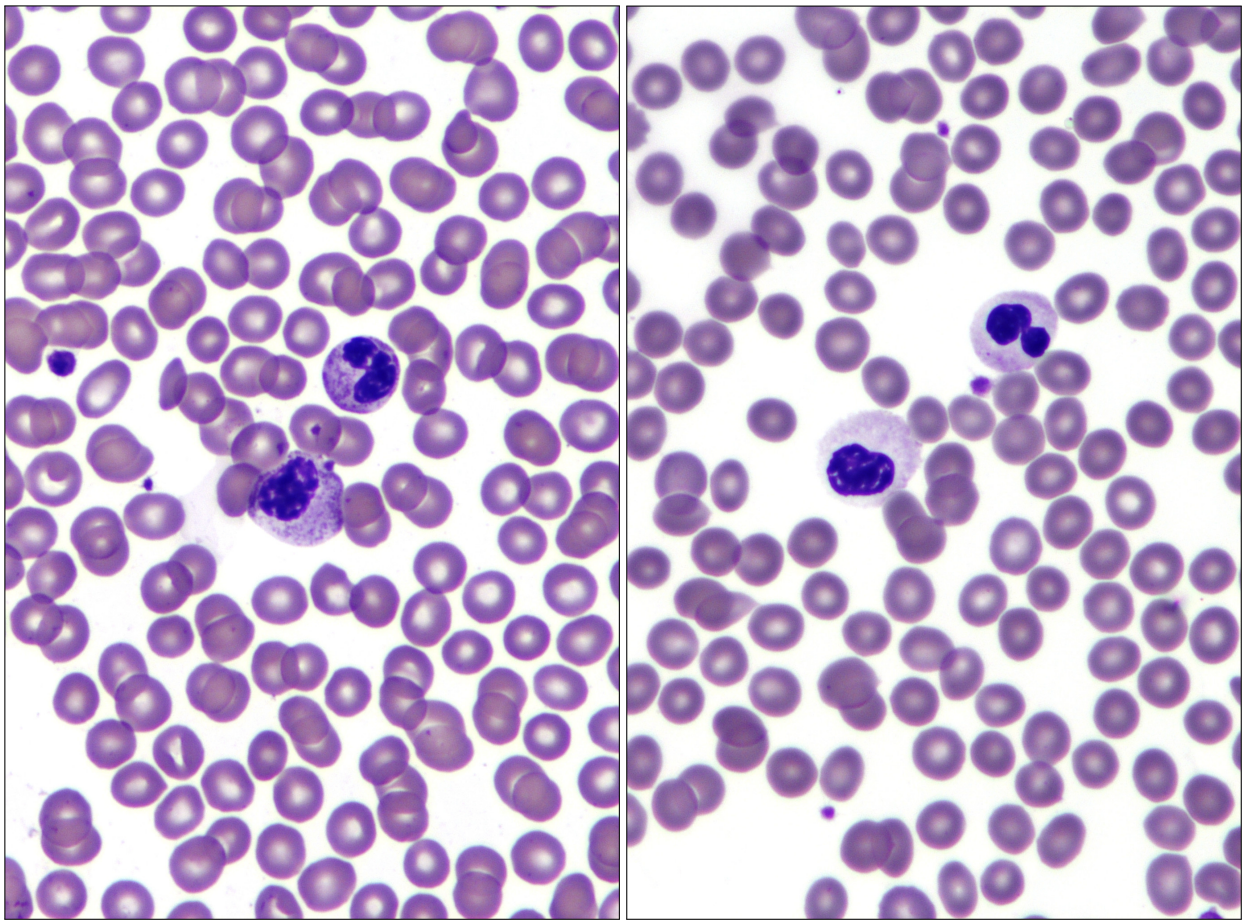

Two patients with chronic lymphocytic leukemia (CLL) were found to have circulating abnormal neutrophils. The first patient was a 68-year-old male who was diagnosed with CLL in 2002 and treated in 2003 with fludarabine-cyclophosphamide-rituximab x 6 with complete remission. He relapsed in 2013 and was treated with bendamustine-rituximab x 6 and then switched to ibrutinib since December 3, 2014 due to rising CLL cells. He had an excellent response to ibrutinib and intravenous immunoglobulin (IVIG) for his autoimmune-mediated thrombocytopenia. He had no symptoms related to the disease

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or treatment. His CBC on October 19, 2016: WBC 5.1 x 10^9/L, RBC 4.19 x 10^{12}/L, Hgb 133 g/L, MCV 94.8 fL, PLT 69 x 10^9/L. However, the peripheral blood smear revealed hypolobated (monolobated or bilobated) neutrophils with poorly demarcated nuclear membrane and strands of condensed chromatin. Areas of punch-through are seen in the nucleus (Figure, left). His CLL relapsed on February 22, 2018 with a CBC: WBC 40.1 x 10^9/L, RBC 4.48 x 10^{12}/L, Hgb 130 g/L, MCV 91.5 fL, PLT 65 x 10^9/L. The patient continued to be managed with ibrutinib and IVIG. He was alive with CLL progression (WBC 55.8 x 10^9/L on March 22, 2018), but except for immune-mediated thrombocytopenia which responded to IVIG there was no anemia or leukopenia/neutropenia. The second patient was a 77-year-old gentleman who was diagnosed with CLL on April 17, 2015, treated with one cycle of R-CHOP on June 06, 2016, and then switched to bendamustine-rituximab on July 26, 2016 for 6 cycles. The patient had no complaints related to the CLL or therapy. His CBC on October 25, 2016: WBC 7.2 x 10^9/L, RBC 4.64 x 10^{12}/L, Hgb 143 g/L, MCV 90.5 fL, PLT 158 x 10^9/L. Many circulating monolobed and bilobed neutrophils were identified in his peripheral blood (Figure, right). These neutrophils also showed hypogranularity, poorly demarcated nuclear membrane, condensed chromatin with white punch-through areas. The patient continued his treatment with Bendamustine and rituximab. The most recent clinical follow up on January 25, 2018 reported no symptoms related to his disease or therapy. He was in complete remission with a normal CBC: WBC 5.8 x 10^9/L, RBC 4.92 x 10^{12}/L, Hgb 152 g/L, MCV 91.1 fL, PLT 153 x 10^9/L.

Pseudo Pleger-Huet cells are the hallmark cells of myelodysplasia. Recently they were reported in patients on Tacrolimus, with cells being monolobed. This is the first report that pseudo Pelger-Huet anomaly was seen in treated CLL patients with no evidence of myelodysplasia. The pseudo Pelger-Huet cells in the current report are slightly different from the dysplastic neutrophils; in addition to the nuclear hypolobation, these neutrophils also show indistinct nuclear membrane, strands of dense chromatin with white punch-through areas. These morphological features distinguish them from the *bona fide* dysplastic neutrophils. Whether this unique neutrophil morphology is caused by CLL disease or therapy remains unknown and it may deserve further investigation.

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