Megakaryocyte in peripheral blood – Not always bad

The presence of megakaryocytes (MKs) in a peripheral smear is an extremely rare occurrence (0.01%)[1] and only a few cases have been reported in the literature. We report a case showing a MK in peripheral smear.

A 6-year-old female child born out of a consanguineous marriage presented with shortness of breath, chest pain, exertional dyspnoea, fatigue, syncopal attacks. On examination, she showed gross pallor and icterus. Investigations revealed haemoglobin (Hb) 4.0 g/dL, with leucopenia (total leucocyte count 3900 cells/mm^3) and thrombocytopaenia (platelet count 30,000/mm^3). She had received two units of blood transfusion. Dengue serology was negative. Nasopharyngeal swab real-time polymerase chain reaction (RT-PCR) was done for severe acute respiratory syndrome coronavirus 2 disease (COVID-19) was also negative. Her follow-up peripheral smear showed microcytic hypochromic blood picture (Hb 6 g/dL) with normal leucocyte count (total leucocyte count 7000/mm^3) and normal platelet count (170,000/mm^3), along with a large cell with abundant granular cytoplasm and compact lobulated nucleus, morphologically compatible with MK (Figure 1).

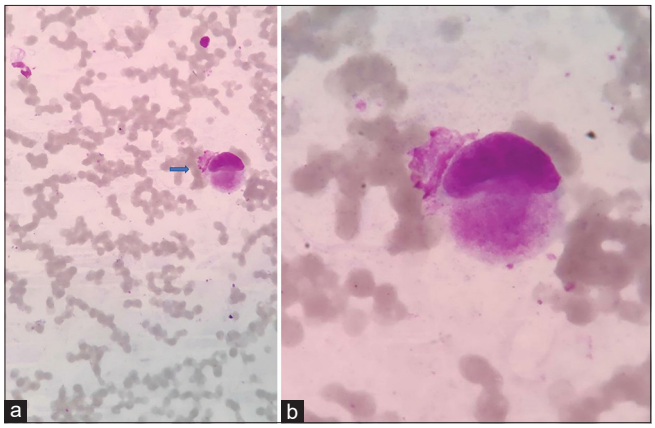

Figure 1: Photomicrograph showing megakaryocyte with abundant granular cytoplasm and compact lobulated nucleus (arrow) (Leishman, ×100) (a), (Leishman, ×10000 (b)

The MKs which arise from haematopoietic stem cells are normally present in the bone marrow and are only rarely seen in peripheral blood. In 1965, Kaufman *et al.*[2] suggested that when MKs move from bone marrow to the lungs, to release 7%–17% of platelets into pulmonary capillaries, around 25% of mature MKs circulate in the PB. Although it is extremely rare to see MKs in PB in normal individuals, they have been reported in PB in haematological diseases like myelodysplastic syndrome[3] and leucoerythroblastic reactions associated with myeloproliferative neoplasms like post essential thrombocythaemia– myelofibrosis.[4] Four cases of non-malignant haematological disorders with MKs in PBs have been reported.[1] MKs have also been reportedin PB of cases of nonhaematological disorders as well.[5]

In anaemia, increased stimulation of erythropoietin (EPO) receptors by EPO causes the appearance of erythroblasts in PB, similarly in thrombocytopaenia also, increased levels of thrombopoietin will cause an increased in MK differentiation which might lead to spillover of MKs into PB. In our case, the child had features of acute viral illness, and her bone marrow might have been recovering from the viral insult which caused pancytopenia earlier.

To conclude, MKs in PB may not always be a cause of concern like in myeloproliferative neoplasms, they can also be seen in recovering cases of thrombocytopaenia due to increased stimulation and indicate a good prognosis.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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