May Hegglin Anomaly: Rare Entity with Review of Literature

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Abstract We present a brief review of a rare entity, May Hegglin anomaly. We also put forth a few pictures characterizing it.

Introduction

May Hegglin anomaly (MHA) is a rare autosomal dominant disorder characterized by variable thrombocytopenia and well defined basophilic cytoplasmic inclusion bodies (resembling Dohle bodies) in the granulocytes [1].

Patients have a mutation of MYH9 gene present in chromosome 22q12–13 [2]. The mutation results in disordered production of nonmuscle myosin heavy chain type IIA. This leads to macrothrombocytopenia secondary to defective megakaryocytic maturation and fragmentation. Leukocyte inclusions are precipitates of myosin heavy chains. Neutrophil and platelet function is considered to be normal [3].

The bleeding tendency associated with MHA is generally mild and depends on the degree of thrombocytopenia. Most patients do not have clinically significant bleeding problems. In rare patient with severe bleeding, platelet transfusions are required.

Case Report

A 27 years old male presented to emergency room with easy fatigability and gingival bleeding on and off since

1 month. He gave history of thrombocytopenia for 5 years (which was an incidental finding during routine complete blood count (CBC) for which no cause could be determined and no treatment was given). There was no history of bruising, bleeding tendency or blood transfusion in the past or bleeding tendency in the family.

On examination the patient was not pale or jaundiced, without any evidence of bruising or ecchymoses. Evidence of fresh bleeding could be seen on gums. There was no evidence of organomegaly.

CBC showed hemoglobin: 138 g/l, white blood count (WBC): $6.4 \times 10^9/l$, platelets: $2 \times 10^9/l$, mean platelet volume (MPV): not recorded. Manual counts showed WBC: $4 \times 10^9/l$ and platelet count: $30 \times 10^9/l$. Peripheral blood smear (PBS) findings were consistent with manual counts. Discrepancy with CBC on automated analyser as probably platelets were counted as lymphocytes. There were basophilic inclusions (resembling Dohle bodies) in neutrophils and platelets showed anisocytosis with very giant forms (Fig. 1).

Bone marrow examination revealed active marrow with normal cellularity for age, normal appearance and maturation of erythroid series, normal maturation of myeloid series with presence of inclusions resembling Dohle bodies in immature myeloid precursors and neutrophils and adequate megakaryocytes with normal lobulation and granularity. Platelet function tests were normal (Fig. 2a, b).

Biochemical parameters (serum protein, serum calcium, blood urea, serum creatinine, liver function tests, serum electrolytes) were normal. His hearing ability was intact.

Based on history, clinical findings and investigations (PBS and BM), a diagnosis of May Hegglin anomaly was made.

Our patient was discharged without giving any treatment. He was advised to refrain from participating in

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Fig. 1 Peripheral blood smear showing giant platelets and Dohle body like inclusion in neutrophil

Fig. 2 Bone marrow aspirate smear showing Dohle body like inclusions in myeloid cells. **a** 40 $\times$. **b** Oil immersion

contact sport, to avoid trauma, not to take drugs that decrease platelet function (like aspirin) and to consult a haematologist before any surgical procedure.

Short Review

May Hegglin anomaly was first described by May in 1909 and in 1945 by Hegglin. The exact incidence of syndrome is unknown [1].

About half of the reported patient are asymptomatic but the other half have platelet counts $< 50 \times 10^9/l$ and abnormal bleeding in the form of epistaxis, gingival bleeding, easy bruising, menorrhagia and excessive bleeding associated with surgical procedures. Fatal bleeding has not been reported [1].

Physical findings may be normal.

MHA, Sebastian syndrome, Fechtner syndrome or Epstein syndrome represent variable expression of a single gene defect. They are all hereditary forms of thrombocytopenia. These syndromes are associated with certain clinical features. e.g. Epstein syndrome is associated with interstitial nephritis and nerve deafness; Fechtner syndrome with nephritis, nerve deafness and congenital cataracts [4].

CBC is essential for diagnosing these cases. The platelet count is decreased but degree of thrombocytopenia varies ($40\text{--}80 \times 10^9/l$). Platelets are enlarged but morphology is normal [1]. On electron microscopy there is an increased amount of disorganized microtubule.

The peripheral blood smear contains cytoplasmic inclusion bodies (resembling Dohle bodies) in neutrophils but also seen in monocytes, eosinophils and basophils. The inclusions are large, spindle shaped, pale blue staining bodies.

Bleeding time is prolonged in proportion to the degree of thrombocytopenia. Platelets aggregate normally in response to various agonists [3].

Most patients do not have clinically significant bleeding problems. Therefore treatment may not be required. If severe bleeding occurs (rarely) platelet transfusion may be required. Prophylactic preoperative platelet transfusion may be warranted and a hematologist should be consulted before a surgical procedure. Corticosteroids and splenectomy are ineffective.

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