Myelodysplastic syndrome with pseudoreticulocytosis

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ABSTRACT

A patient with myelodysplastic syndrome (MDS) with refractory anemia who had marked reticulocytosis in the absence of hemolytic anemia and/or blood loss is reported. Erythrocyte survival test showed that more than 50% of the patient's reticulocytes were still present on day seven. This should be due to the prolongation of reticulocyte maturation in MDS, and is known as pseudoreticulocytosis. This phenomenon which mimicks hemolytic anemia is an unusual presentation of myelodysplastic syndrome, with only 7 patients with pseudoreticulocytosis being reported previously.

Key Words: Myelodysplastic syndrome, Pseudoreticulocytosis.

ÖZET

Psödoretikülositoz görülen bir miyelodisplastik sendromu olgusu


 Anahtar Kelimeler: Miyelodisplastik sendrom, Psödoretikülositoz.
INTRODUCTION

Myelodysplastic syndrome (MDS) is a clonal disorder which is usually characterized by peripheral reticulocytopenia, leukopenia, and/or thrombocytopenia due to inadequate and dysmorphic hematopoiesis[1]. Reticulocytosis is a rare manifestation of MDS, and when present, it is usually attributed to bleeding or immune hemolysis. Anemia with reticulocytosis in the absence of hemolysis or blood loss may arise in MDS as a consequence of delayed maturation. This phenomenon mimics hemolytic anemia and is called pseudoreticulocytosis. Pseudoreticulocytosis in MDS patients is extremely rare and only a few reports have been published so far[2-8]. In this case presentation, we report an MDS refractory anemia (MDS-RA) with pseudoreticulocytosis.

A CASE REPORT

A 74-years-old female patient was referred to our University Hospital because of progressive weakness due to anemia. Her hemoglobin levels ranged between 7-9 g/dL. Her medical history included mild thrombocytopenia which was revealed 7 years ago. Then she had refused bone marrow aspiration and biopsy, and has not been followed up further. The patient had been noted to have recurrent abscesses in the area of left labium majus of vagina, refractory to antibiotic therapy. No specific causes could be identified, such as tuberculosis, deep fungal infection or granuloma inguinale, but chronic inflammation was documented by biopsy and Staphylococcus aureus was cultured from the lesion. During the following period, Proteus mirabilis was also documented. On physical examination, she looked pale. No lymphadenopathy or hepatosplenomegaly was found. Suppurative and oedematous abscess formation with duration at the area of left labium majus of vagina was observed. At presentation, the leucocyte count was 4.9 x 10⁹/L, hemoglobin 7.8 g/dL, mean corpuscular volume 107.5 fl and platelet count 50.0 x 10⁹/L. Laetic dehidrogenase level was 924 mg/dL, two-fold higher than the normal range. Vitamin B12, folic acid, AST, ALT, BUN, creatinin, AP, GGT and albumin levels were normal. Examination of peripheral blood smear showed marked anisocytosis, poikilocytosis, macrocytosis, polychromatophilia, basophilic stipling and fragmentation of erythrocytes, and white blood cell morphology was normal with neutrophil prevalence. No blasts cell was seen. The reticulocyte percentage was 27% with the standart supravital staining technique and the reticulocyte count was persistently high, ranging between 25-32%. Bone marrow revealed normocellularity with dysplastic features. Erythroid lineage showed nuclear budding and irregularities. Megakaryocytes displayed nuclear fragmentation. Myeloblasts made up to 1.6% of marrow elements. The diagnosis of the patient was confirmed as MDS with refractory anemia (MDS-RA). The Coombs test was negative, the chest radiogram and computerised tomography of the abdomen were normal. The haptoglobin level was slightly decreased and indirect hyperbilirubinemia was documented. Pyruvate kinase and glucose 6 phosphatase dehidrogenase levels were normal. The osmotic fragility of the erythrocytes were normal and the membrane inhibitor of reactive lysis (MIRL) and decay accelerating factor (DAF) antigens were expressed on the surface of erythrocytes. During the hospitalization period, blood loss was ruled out and the vaginal abscess was treated with surgical drainage and appropriate antibiotics. The patient was on steroid therapy during the follow up, yet the hemoglobin level did not drop and reticulocytosis persisted. To evaluate the etiology of reticulocytosis, red cell survival test was performed. Venous blood sample was collected from the patient and incubated at 37°C. Reticulocyte count was performed every other day by using standart supravital staining on day 0 to day 7. A patient with Coombs positive hemolytic anemia was used as control. The value obtained on day 0 was expressed as 100%[6]. In the control blood sample, more than 50% of the reticulocytes disappeared...
on day 1, while more than 50% of the patient’s reticulocytes were still present on day 7. This finding demonstrated the delayed maturation of erythroid cells in our patient (Figure 1).

**DISCUSSION**

Myelodysplastic syndrome (MDS) is a clonal disorder that is usually characterized by peripheral reticulocytopenia, anemia, thrombocytopenia and leukopenia due to ineffective hematopoiesis, despite increased bone marrow cellularity\(^1\). Erythroid activity in the bone marrow of MDS patients can vary widely from hypoplasia to hyperplasia with dysplastic changes and ineffective erythropoiesis. Although reticulocyte counts are normal or low in MDS, many qualitative abnormalities of erythrocytes have been described, in some instances leading to hemolytic anemia with ineffective erythropoiesis. Clinically significant hemolysis and reticulocytosis have been reported in association with a reduction in pyruvate kinase or an increase in adenosine deaminase activities and particularly with Coombs positivity\(^{11,9-12}\). Reticulocytosis is extremely rare in MDS patients in the absence of hemolysis and blood loss. When present, it may be due to prolongation of reticulocyte maturation and is known as pseudoreticulocytosis\(^2-8\). Pseudoreticulocytosis, mimicking hemolytic anemia, is an unusual presentation of myelodysplastic syndrome. Only 7 patients with pseudoreticulocytosis have been reported in the literature previously\(^{2-8}\). Our patient has presented with erythroid fragmentation in the peripheral smear, a high LDH level, indirect hyperbilirubinemia, marked reticulocytosis and a slightly low haptoglobin level, thus mimicking hemolytic anemia. Despite these findings, erythroid cellularity in the bone marrow was normal. Coombs tests were negative, the hemoglobin level was stable and no cause for hemolysis could be found. The diagnosis of MDS-RA with pseudoreticulocytosis was reached by the help of the erythrocyte survival test and the bone marrow biopsy. The cytogenetic profile of the patient was unavailable, therefore it could not be determined whether the cytogenetic profile also contributed to pseudoreticulocytosis.
In conclusion, although pseudoreticulocytosis is a rare phenomenon, this diagnosis should be kept in mind in MDS patients who present with an unknown etiology of reticulocytosis.

REFERENCES


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