CASE REPORT

PRCA with myelofibrosis: an unusual case report

Rakhee Kar · Manoranjan Mahapatra · Hara P. Pati

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Abstract The association of PRCA and myelofibrosis is very rare with only two such cases reported in the literature. Leukemic transformation in myelofibrosis is known but the progression of PRCA to acute leukemia is very rare. We present an unusual case of PRCA with myelofibrosis which after 14 months of transfusion dependent anemia transformed to acute monocytic leukemia.

Keywords PRCA · Myelofibrosis · Acute Leukemia

Introduction

Pure red cell aplasia (PRCA) may be secondary to a host of neoplastic, autoimmune or infectious diseases. Similarly myelofibrosis may be primary or secondary to marrow involvement by malignancy, infections or other diseases. However, the association of PRCA and myelofibrosis is very rare with only two such cases reported in the literature [1, 2]. Herewith we present a case with such an unusual association, which after 14 months of transfusion dependant anemia, transformed to acute monocytic leukemia.

Case report

A 72-year-old male presented in August 2005 with breathlessness and fatigability for 4 months. He was a known case of coronary artery disease and non-insulin dependent diabetes mellitus (NIDDM) with blood sugar under control. His anemia was progressive requiring frequent red cells transfusions. On examination, there was pallor but no icterus, hepatosplenomegaly or lymphadenopathy. His serum iron profile showed values in normal range for our laboratory with serum iron 112 µg%, UIBC 206 µg%, TIBC 318 µg% and percentage saturation of 35.2%. Serum ferritin level was raised with 1100 ng/ml. Vitamin B₁₂ and serum folate levels were normal and the patient had received trial of hematinics with no response. At presentation his hemoglobin was 46 gm/l with reticulocyte count 0.4%, TLC was $4.1 \times 10^9/l$ with DLC showing polymorphs 51%, lymphocytes 43%, monocytes 3%, eosinophils 1% and myelocytes 2% and platelet count was $109 \times 10^9/l$. Investigations for PNH were negative. The patient continued to remain transfusion-dependent and came back in March 2006. Bone marrow

R. Kar¹ · M. Mahapatra² · H. P. Pati³

¹Senior Resident

²Associate Professor

³Professor

Department of Hematology,
IRCH Building, AIIMS,
New Delhi - 110 029, India

R. Kar (✉)

e-mail: rakhee_kar@rediffmail.com

aspirate done at this time showed erythroblastopenia (2%) with lymphocyte predominance (44%) and the rest were myeloid series of cells. Megakaryocytes were seen. There were no evidence of dyshematopoiesis. The bone marrow biopsy showed myelofibrosis with grade-3 reticulin fibrosis with marked paucity of erythroid cells. A diagnosis of PRCA with Myelofibrosis was made. Investigations for any primary cause of myelofibrosis were not contributory.

The patient continued to be transfusion dependent and received more than 20 units of packed red cells over one year. On a follow up visit, the patient presented 3 months later in June 2007, nearly 14 months after his initial diagnosis of PRCA with Myelofibrosis, with mild hepatosplenomegaly (spleen-3cm and liver-2cm below costal margins). His hemogram showed leukocytosis ($TLC-32.4 \times 10^9/l$) and thrombocytopenia ($40 \times 10^9/l$) and peripheral smear showed 23% monoblasts and 16% promonocytes. A morphological diagnosis of acute monocytic leukemia (AML-M5) was made. The patient didn't consent for a bone marrow procedure or any therapy.

Discussion

Although both myelofibrosis and PRCA can be secondary to various hematological and non-hematological conditions, their co-existence has been reported in only two case reports earlier [1, 2]. In one, PRCA in a 42-year-old patient responded to immunosuppressive therapy and relapsed on stoppage of medication and subsequently developed myelofibrosis [1]. The author has postulated an autoimmune PRCA secondary to myelofibrosis but appearing before the latter. In another patient [2], B-cell neoplasm was reported accompanied with PRCA and myelofibrosis. The authors have suggested the possibility that dysregulated T-cells induced by neoplastic B-cell may have given rise to concomitant PRCA and myelofibrosis.

Leukemic transformation in idiopathic myelofibrosis is reported in 8% to 23% of patients in the first 10 years of diagnosis [3]. In a large study [4] of 2333 consecutive patients with myelofibrosis with myeloid metaplasia (MMM), 91 were reported to undergo leukemic transformation (LT) of myeloid origin (acute myeloid leukemia, AML) with all the subtypes except AML, M3. Although the association of PRCA with chronic lymphocytic leukemia [5] and large granular lymphocytic leukemia [6] has been described, however its progression to acute leukemia is rare. There is only one case report [7] describing the progression of PRCA through hyperfibrinolytic MDS to acute myeloid leukemia.

Some of the important features of Primary autoimmune myelofibrosis (PAIMF) [8] are lymphocyte infiltration in bone marrow and absent or mild splenomegaly. However, immunological abnormalities have been reported in idio-

pathic myelofibrosis as well in the form of circulating immune complexes, positive serological tests like ANA, low complement levels and bone marrow lymphoid nodules [9, 10]. Our patient presented with transfusion dependant anemia and showed both PRCA and myelofibrosis. The absence of any antecedent condition known to be associated with either PRCA or myelofibrosis makes it truly idiopathic. The presence of significant mature lymphocyte infiltrate in the marrow suggests an associated immune pathogenesis. The progression to acute myeloid leukemia raises the strong possibility of a clonal evolution of the primary disease process. In the absence of any primary cause for myelofibrosis and later on its progression to acute myeloid leukemia, we postulate the possibility of a primary idiopathic myelofibrosis presenting with PRCA of immune origin, which progressed to AML in a year's time.

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