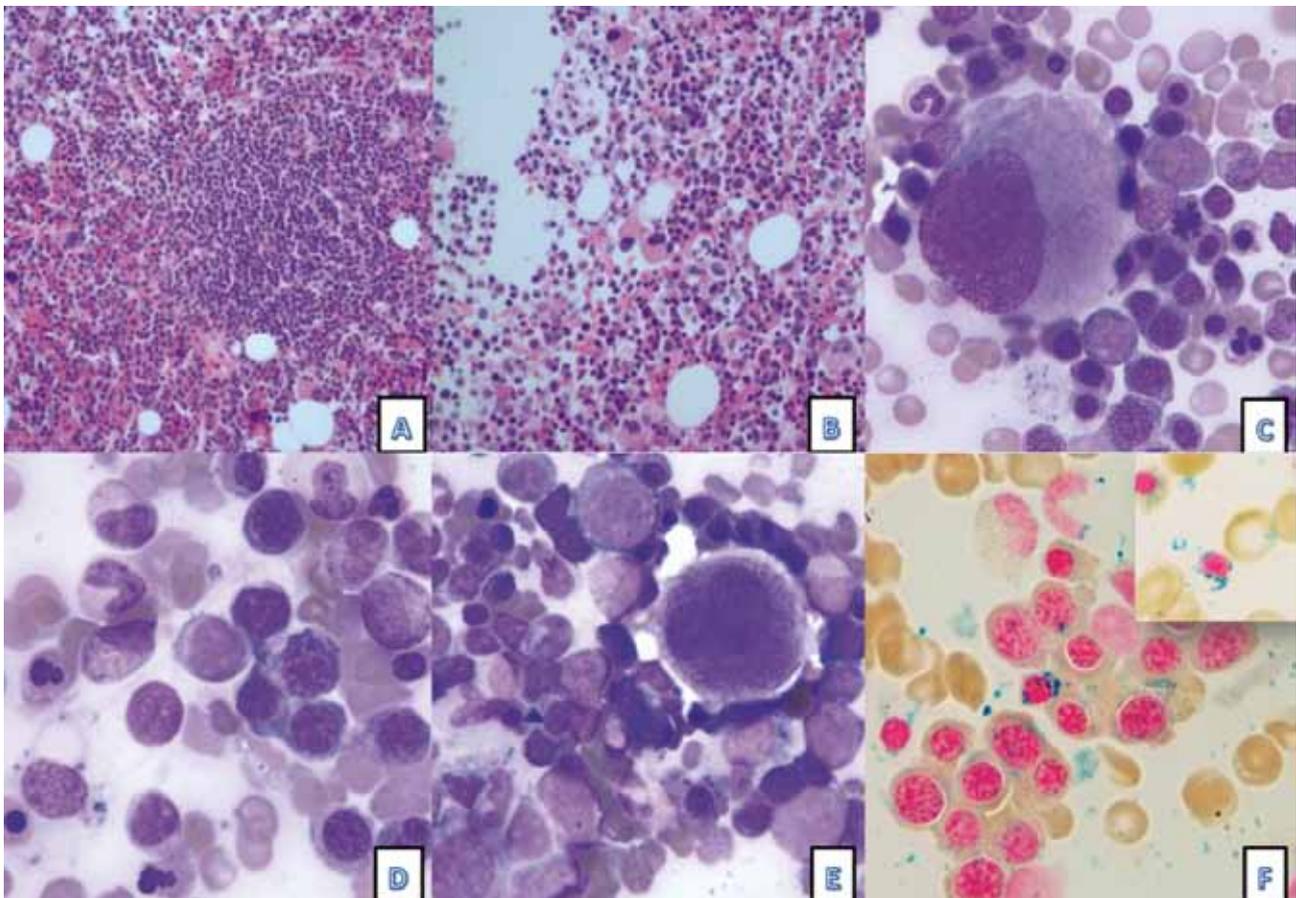


## A 70-year-old man with pancytopenia

A 70-year-old man presented with pancytopenia. The patient's previous medical history was not available. The blood analysis revealed hemoglobin 6.3 g/dl, leukocyte count  $3.3 \times 10^6/\text{mm}^3$  and platelet count  $113000/\text{mm}^3$ . The patient underwent a bone marrow biopsy.

In the microscopic examination, bone marrow sections were hypercellular and exhibited multiple lymphoid aggregates and increased number of megakaryocytes showing paratrabeccular clustering. Immunohistochemically lymphoid aggregates were positive for CD3 and CD20 in

a mixed pattern. The bone marrow aspirate showed dysplastic features in both erythroid precursors and megakaryocytes. Dysplastic erythroblasts exhibited atypical multinucleation and displayed irregularly shaped nuclei. Dysplastic megakaryocytes were small in size and had hypolobulated nuclei, and some of them had abnormally disconnected nuclear lobes. Prussia stain for iron showed increased storage iron and 30% of the erythroid precursors were ring sideroblasts. The percentage of blasts was 4% in the bone marrow and 0.5% in the peripheral blood.



*Fig 1 (A): Hypercellular bone marrow biopsy with lymphoid aggregates; (B): Increased number of megakaryocytes in clusters showing dysplastic features; (C): Hypolobulated megakaryocyte and several erythroid precursors with nuclear irregularities; (D): Dysplastic erythroid precursors and (E) dysplastic megakaryocyte; (F): Ring sideroblasts*

### What is your diagnosis?

**Myelodysplastic syndrome, Refractory cytopenia with multilineage dysplasia with ring sideroblasts.** The diagnosis was based on clinical findings (pancytopenia), morphologic features on bone marrow biopsy and aspirate showing dysplasia in both erythroid precursors and megakaryocytes and the presence of more than 15% ring sideroblasts.

### DISCUSSION

Myelodysplastic syndromes (MDS) are a group of clonal haematopoietic stem cell diseases characterized by cytopenia(s), dysplasia in one or more of the major myeloid cell lines, ineffective haematopoiesis, and increased risk of development of acute myeloid leukemia (1). The patients' symptoms are generally related to cytopenia(s). The peripheral blood studies reveal cytopenia(s) and bone marrow smears show dysplasia. Increased number of blasts can be seen in a subset of cases but the count should be less than 20%. According to the WHO classification system they are evaluated in seven categories; refractory cytopenia with unilineage dysplasia, refractory anemia with ring sideroblasts (RARS), refractory cytopenia with multilineage dysplasia (RCMD), refractory anemia with excess blasts (RAEB), myelodysplastic syndrome associated with isolated del 5q, myelodysplastic syndrome, unclassifiable types and childhood myelodysplastic syndrome. The major manifestation of refractory cytopenias

is ineffective hematopoiesis of a single lineage and refractory anemia is the most common symptom (2).

In refractory cytopenias with multilineage dysplasia, there are one or more blood cytopenias and dysplastic changes in 10% or more of the cells in two or more myeloid lineages (1). For patients who meet this definition of RCMD and whose marrow also show more than 15% ring sideroblasts, the diagnosis should be "RCMD with ring sideroblasts". The possibilities of RAEB must be excluded by ensuring that there are less than 1% circulating blasts, less than 5% marrow blasts, and no Auer rods. The possibility of chronic myelomonocytic leukemia must also be excluded by establishing the absence of a monocytosis (3).

In RCMD, the frequency of cytogenetic aberrations, incidence of acute leukemic progression, and overall survival were noted to be intermediate between those patients with RA or RARS and those with MDS with excess blasts (3).

In summary, diagnosis of MDS should be considered for patients with cytopenia in the peripheral blood whose bone marrow samples show the presence of dysplasia in one or more lineages. The subclassification also requires the knowledge about the percentage of blasts in the blood and bone marrow and whether or not ring sideroblasts are present. Furthermore, the absolute monocyte count should be less than  $1 \times 10^6/\text{mm}^3$  to exclude chronic myelomonocytic leukemia which is in the differential diagnosis.

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### References

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