Numerous aggregates of “tiny” micromegakaryocytes in the bone marrow

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A 70-year old male presented with leukocytosis ($24.9 \times 10^9/L$) and thrombocytosis ($727 \times 10^9/L$). Hb was 14.9 g/dL, neutrophils 81%, basophils 1%, eosinophils 4%, and myelocytes 1%. He had no splenomegaly. Serum LDH was 477 U/L, B₁₂755 pg/m, and ferritin 104 ng/dL. Neutrophil alkaline phosphatase activity was normal. The marrow was moderately cellular with many aggregates of micromegakaryocytes, each aggregate comprising up to 20 “tiny” micromegakaryocytes (Fig. 1). Small cells were close to the size of lymphocytes. Although usual-sized micromegakaryocytes were occasionally seen, most “tiny” micromegakaryocytes were found to form aggregates accompanying many platelets (Fig. 2a, b) and such aggregates were scattered in the entire length of marrow film. Immature granulocytes showed hypogranulation (Fig. 3a), and occasional mature cells showed hypersegmentation (Fig. 3b, c) and cytoplasmic Döhle bodies (arrowheads Fig. 3d). Erythroid series showed mild megaloblastoid changes. These features resembled myelodysplastic syndromes (MDS). Blast cells were few. Normal marrow cytogenetic analysis and the lack of BCR-ABL in mRNA analysis excluded chronic myeloid leukemia

Fig. 1 Moderately cellular marrow with many aggregates of micromegakaryocytes

(CML). Marrow WT1 mRNA level was 1600 copies/ μ g RNA. No marrow fibrosis was seen in biopsy. These findings excluded myeloproliferative neoplasm (MPN). Proliferation and marked dysplasia in megakaryocytic and myeloid lineages falls within the scope of MDS/MPN, unclassifiable, according to the current WHO system, rather than atypical BCR-ABL negative CML. The marrow findings remained essentially unchanged in repeat study although blood counts oscillated in response to the intermittent hydroxyurea (1000 mg) treatment.

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Fig. 2 “Tiny” micromegakaryocytes form aggregates accompanying many platelets

Fig. 3 **a** Hypogranulation in mature granulocytes, **b, c** hypersegmentation in occasional mature cells, and **d** cytoplasmic Döhle bodies (arrowheads)