Answer:

D. Acute Myeloid Leukemia (AML) with myelodysplasia related changes.

AML with myelodysplasia-related changes is defined by cases that fit the criteria for diagnosis of AML (≥20 percent blasts in the peripheral blood or bone marrow), without a history of prior cytotoxic therapy for an unrelated disease, with one or more of the following three characteristics associated with myelodysplasia:

1. AML that evolves from previously documented myelodysplastic syndrome (MDS).

2. AML that demonstrates MDS-related cytogenetic abnormalities, such as monosomy 5 or del (5q), monosomy 7 or del (7q), isochromosome 17p.

3. AML with morphologically identified multilineage dysplasia, defined as dysplasia present in greater than or equal to fifty percent of cells in two or more hematopoietic lineages. (1,2)

In addition, AML with a recurrent genetic abnormality has to be excluded. Our patient's bone marrow biopsy demonstrated hypercellularity with an increased population of myeloblasts (24% by immunohistochemistry performed on the clot section) in addition to multilineage dysplasia. These findings, accompanied by the detection of a myelodysplasia-related cytogenetic abnormality (deletion of 5q identified by both FISH and routine cytogenetics) indicate a diagnosis of acute myeloid leukemia with myelodysplasia-related changes.

Please click the link to review the accompanying images.

References

1. World Health Organization Classification of Tumours of Haematopoietic and Lymphoid Tissues, Swerdlow SH, Campo E, Harris NL (Eds), IARC Press, Lyon 2008.

2. Weinberg OK, Seetharam M, Ren L, et al. Clinical characterization of acute myeloid leukemia with myelodysplasia-related changes as defined by the 2008 WHO classification system. Blood 2009; 113:1906.