

Medical Quiz Answers

A1. Bone marrow examination. Bone marrow aspirate in figure 1 and bone marrow biopsy in figure 2.

A2. Lymphoplasmacytic lymphoma (LPL).

A3. Immunophenotyping, immunohistochemistry (IHC), molecular and cytogenetic studies.

DISCUSSION

Bone marrow examination and immunocytochemistry, cytogenetic analysis, flow cytometry, and molecular assays are highly crucial for the diagnosis and treatment of hematologic and other illnesses¹.

The bone marrow aspiration (BMA) is excellent for cytomorphological details which enables the hematopathologist in recognizing the abnormal hematopoietic cells. Bone marrow trephine biopsy (BMB) demonstrates the arrangement of hematopoietic cells to assess the cellularity of the marrow and allows infiltration to be recognized².

Indications for BMB are anemia, pancytopenia, leukemia, thrombocytopenia, and many others².

Our patient's complete blood count (CBC) revealed hemoglobin of 8.2g/dl, total white blood cells $9.4 \times 10^9/l$ with 70% lymphocytes, and platelet count of $210 \times 10^9/l$. Peripheral blood smear showed leukoerythroblastic blood picture, lymphocytosis with occasional plasmacytoid lymphocytes. Bone marrow aspirate was a part of a diluted, however, the aspirate and touch imprint showed reduced hematopoiesis with diffuse infiltration by lymphocytes. Bone marrow biopsy was hypercellular with around 90% cellularity. Megakaryocytes were adequate. Granulopoiesis and erythropoiesis were reduced with diffuse infiltration by homogenous lymphoid cells. Immunohistochemistry was CD 20 and IgM strong positive. CD 138 few scattered positive cells found. CD10, CD 30, CD23, BCL6 and Cyclin D were all negative. Cytogenetic result was 46, XX, del (11)(q23). Serum protein electrophoresis showed IgM band at B-region 20g/l. Immunofixation electrophoresis was positive for IgM band and lambda light chain.

Waldenström macroglobulinemia (WM) is a lymphoplasmacytic lymphoma associated with a monoclonal immunoglobulin M (IgM) protein according to WHO. Fatigue is the most common presenting symptom³. Usually, it presents with hepatomegaly (20%), splenomegaly (15%), and lymphadenopathy (15%). IgM monoclonal protein associated with $\geq 10\%$ clonal lymphoplasmacytic cells in bone marrow confirms the diagnosis⁴.

CONCLUSION

Bone marrow aspirate and biopsy are for diagnostic and prognosis purposes of a critical wide variety of hematological and oncological disorders. Morphological evaluation of BM has recently been supplemented by other ancillary assays.

LPL is a neoplasm of small B lymphocytes and plasmacytoid lymphocytes. The distinction between LPL and other B-cell neoplasm is challenging.

Potential Conflicts of Interest: None.

Competing Interest: None.

Sponsorship: None.

Acceptance Date: 8 November 2020.

Ethical Approval: Approved by the Department of Pediatrics, Salmaniya Medical Complex, Bahrain.

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