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Plasma Cell Leukaemia (PCL): A Review

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Leukemia is a blood and bone marrow malignancy. Chronic lymphocytic leukemia (CLL), acute lymphocytic leukemia (ALL), chronic myelogenous leukemia (CML), and acute myeloid leukemia are the four main kinds of leukemia (AML). The pathological diagnosis of plasma cell leukemia is based on histological, immunophenotypic, and cytogenetic findings in addition to the circulating plasma cell count.

Keywords: Chronic lymphocytic leukaemia; acute lymphocytic leukaemia; chronic myelogenous leukaemia; acute myeloid leukaemia.

1. INTRODUCTION

Leukemia is a blood and bone marrow malignancy. Chronic lymphocytic leukemia (CLL), acute lymphocytic leukemia (ALL), chronic myelogenous leukemia (CML), and acute myeloid leukemia are the four main kinds of leukemia (AML). When cancer cells develop

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lymphocytes (a type of white blood cell) in the bone marrow, the leukemia is referred to be "lymphocytic" (or "lymphoblastic"). The leukemia is called "myeloid" (or "myeloid") when cell alterations occur in the sort of cells in the bone marrow that normally generate red blood cells, some forms of white blood cells, and platelets [1-3].

Plasma cell leukemia is a rare and aggressive form of multiple myeloma that is defined by peripheral blood involvement and has a poor prognosis. It's characterized as the presence of more than 20% of leukocytes in the peripheral blood or 2 x 10^9/l circulating plasma cells. Primary plasma cell leukemia (60%) and secondary plasma cell leukemia (40%) are the two types of plasma cell leukemia [4,5]. Malignant plasma cell clones are thought to arise spontaneously in primary plasma cell leukemia, with peripheral blood proliferation being the presenting symptom. Secondary plasma cell leukemia is a fatal condition that develops from the clonal development of latent multiple myeloma. Plasma Cell leukemia takes places in 2% to 4% of myeloma cases, and is extra not unusualplace in mild chain, IgE, and IgD myeloma, and much less not unusualplace in IgG or IgA myeloma [4,6-10].

2. TYPES OF PLASMA CELL LEUKAEMIA

Plasma cell leukemia can be primary or secondary. The primary form occurs in people without multiple myeloma, while the secondary form usually appears as a late manifestation in people with multiple myeloma. It occurs in 12% of multiple myeloma cases. The exact incidence of primary plasma cell leukemia is unknown, but it is believed to be less than one in a million. Hepatosplenomegaly and lymphadenopathy are more common in primary plasma cell leukemia than in secondary plasma cell leukemia. Osteolytic lesions are more common in patients with secondary plasma cell leukemia (100% vs. 60%). The median age of patients with plasma cell leukemia is 5060 and the ratio of males to females is approximately equal.

Whether primary or secondary, plasma cell leukemia is clinically similar to advanced multiple myeloma. Patients may have anemia, cytopenias, repeated bacterial infections, or kidney failure. All of our cases have anemia and thrombocytopenia. The formation of Rouleaux is usually evident on the peripheral blood smear. This is evident in our case. Leukocytosis ranges from 20 to more than 100 x 109 / L, with 20% to 100% plasma cells. In one of our cases of secondary plasma cell leukemia, there was moderate leukopenia, but the differential count showed 34% of plasmablasts [11].

3. PATHOLOGICAL DIAGNOSIS

In addition to the circulating plasma cell count, the pathologic diagnosis of plasma cell leukemia is also based on histology, immunophenotype, and cytogenetic findings. The bone marrow biopsy usually shows aggregates or plaques of tumor plasma cells, which replace the normal components of the bone marrow.

Peripheral plasma cells range from mature forms with characteristic perinuclear and "dial" chromatin to immature embryonic cell forms with weakly cross-linked chromatin, high nuclear / cytoplasmic ratio, and prominent nucleoli [11]. Immature tumor cells are indistinguishable from myeloblasts. In some cases, plasma cells show lymphoid morphology. Plasma cell leukemia has a variety of adverse prognostic indicators, including elevated lactate dehydrogenase, elevated β2-microglobulin, hypercalcemia, a high proportion of benzene proteinaemia, and extramedullary involvement.

Plasma cells in plasma cell leukemia often show more immature phenotypes. The CD20 PANBS cell antigen is expressed at 17% of 50% and multiple cases of myeloma of plasma cell leukemia cases. In addition, tumor cells in the bone marrow and peripheral blood of leukemia in primary and secondary plasma cells generally do not express CD56. It is believed that this plays an important role in the stream of the bone marrow in plasma cells [11]. The difference in the immunodigen may be related to the explanation of survival rates between the two entities. The expression of CD56 in some cases of plasma cell leukemia is associated with a good prognosis, and the expression of CD20 is associated with a shorter survival. According to reports, plasma cell leukemia has a high incidence of cellular genetic abnormalities compared to multiple myeloma [4].

Traditional cytogenetic studies showed that 3040% of myeloma cases had abnormal nuclear, but the proportion of cases of plasma cell leukemia was 68%.

A specific number of chromosomal anomalies described in plasma cell leukemia includes

monosome 13, chromosome 1, Trisomy 18, and single Sol X [12].

Some translations associated with adverse results in patients with leukemia (GERTZ and BUADI 2010, 2010, 2010), especially plasma cells, are initially multiple multiple times, can react well with chemotherapy comprising a single agent used. Myeloma

4. CONCLUSION

Plasma cell leukemia is a rare and aggressive variant of multiple myeloma with a poor prognosis.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Byrd JC, Furman RR, Coutre SE, et al. Targeting BTK with ibrutinib in relapsed chronic lymphocytic leukemia. New England Journal of Medicine. 2013;369(1): 32-42.
2. Tuazon SA, Holmberg LA, Nadeem O. et al. A clinical perspective on plasma cell leukemia; current status and future directions. Blood Cancer J. 2021;11:23.
3. Pellegrino M, Teodora S, Luciana V, Vitina G, Filomena N, Gabriella V, Giovanni BB, Francesco LR, Fiorella D. An update on biology, diagnosis and treatment of primary plasma cell leukemia. Expert Review of Hematology. 2019;12(4):245-253.
4. Swerdlow SH, campo E, Harris NL et al. who classification of tumors of Haemopoietic and lymphoid Tissues. Iarc: lyon; 2008.
5. Krisstina G, Sheri S, Jonathan J.K, Joseph M, Andrew J. Cowan. Plasma cell leukemia: A review of the molecular classification, diagnosis, and evidenced-based treatment. Leukemia Research 2021;111:106687.
6. Ricardo D. Parrondo, Muhamad AM, Craig R, Taimur S, Vivek R, Eli M, Rahma W, Victoria A, Wilson G, David D, Suzanne H, Prashant K, Asher A. Chanan-Khan, Sikander A. Efficacy of Daratumumab-Based Regimens for the Treatment of Plasma Cell Leukemia. Clinical Lymphoma Myeloma and Leukemia. 2021;21(5):355-360.
7. Obeagu EI, Obeagu GU. Use of Umblical Cord Blood in the Management of Leukaemia. Open Acc J Oncol Med. 2018;2(3). OAJOM.MS.ID.000138. DOI: 10.32474/OAJOM.2018.02.000138
8. Obeagu Emmanuel Ifeanyi, et al. Acute Leukaemia: A Sudden Killer to Human Beings. EC Emergency Medicine and Critical Care. 2020;4(6):154-167.
9. Obeagu EI. A Review on Bezene and Haematological System. Blood Res Transfus J. 2018;2(2):555582. DOI: 10.19080/OABTJ.2018.02.555582
10. Obeagu EI, et al. Acute Leukaemia: A Sudden Killer to Human Beings. EC Emergency Medicine and Critical Care 2020;4(6):154-167.
11. Prabhat D, Bijur SJ, Pathare AV. PlasmaCell leukaemia--a report of two cases. J Postgrad Med. 1998;44(2): 47-9
12. Gertz ma and buadi fk. Haematologica. 2010;95(5):705–707.

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