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General Medicine

PROGNOSTIC ROLE OF BONE MARROW BIOPSY IN MULTIPLE MYELOMA– A TERTIARY CENTER STUDY OF 50 PATIENTS

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ABSTRACT Multiple Myeloma is a common old age malignancy, with increased monoclonal plasma cells in bone marrow. We studied bone marrow biopsy of 50 such patients for various parameters including tumor load (confirmed by using CD38, CD 138), pattern of involvement, cellularity, differentiation of plasma cells, residual hematopoiesis, and fibrosis. Osteolysis, surface resorption and amyloidosis were also noted as rare findings. These prognostic factors are accurately assessable only on biopsy are important in a center where IL-6 and ß2 microglobulin assays are not available.

KEYWORDS : Multiple myeloma, Bone marrow biopsy, prognosis

INTRODUCTION:

Multiple Myeloma (MM) is commonest hematologic malignancy of old age.1 It has varied biological behavior. Among the investigations performed, Bone marrow aspirate (BMA) is frequent, along with serum calcium levels, immunofixation, serum free light chain assay.1 But Bone marrow biopsy (BMB) is done in few cases only. We aim to highlight role of BMB in prognosis of MM

MATERIALS AND METHODS:

The study group included 50 patients of multiple myeloma diagnosed over a period of 3yrs based on criteria of International Myeloma working Group.2 Their Bone Marrow Biopsy (BMB) was examined for, cellularity, differentiation of plasma cells according to classification by Griepp et al 1, residual hematopoiesis, pattern of infiltration and fibrosis. CD38, CD138, kappa and lambda antibodies were used for diagnosis and assessment of clonality.

10 cases with 10-15% reactive plasma cells were taken as control, assessed using kappa and lambda.

RESULTS

Age of patients ranged from 30-82 years. Out of 50, 35 patients were Male (70%) and 15 were Female (30%). Pattern of involvement was diffuse in 18, focal in 19, interstitial in 13 cases. Morphology of plasma cells was classified as mature in 23, Immature in 9, intermediate in 8 and plasmablastic in 10 cases. Residual hematopoiesis was adequate in 35 while inadequate in rest 15 cases. 12 (24%) of above cases showed presence of fibrosis. Monoclonality was demonstrable using CD38, CD138, kappa, and lambda. Other findings include Surface bone resorption in 3 cases, Osteolysis in 2 case and Amyloidosis in 1case. 22 cases (44%) demonstrated tumor load of more than 50%, 26 cases (52%) showed load of 20-50% and only two cases of <20% load. 13 cases in total showed less tumor load on bone marrow aspirate as compared to bone marrow biopsy.

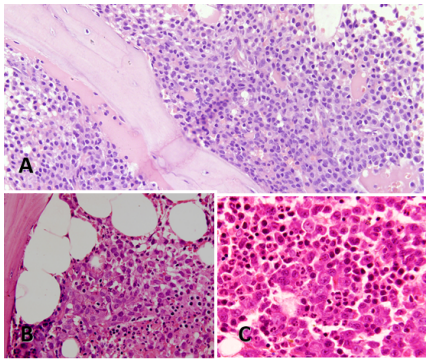

FIGURE1: A. Diffuse pattern of infiltration of marrow by plasma cells (HE stain, 40X), B. Focal/Nodular pattern of infiltration by intermediate type of plasma cells (HE stain, 400X), C. Interstitial pattern of infiltration by immature plasma cells (HE stain, 400X),

Control cases showed polyclonality of plasma cells, as demonstrated by kappa and lambda immunostaining.

DISCUSSION

Mean Age of patients was 58.3yrs., comparable to Rana et al and Stifter et al.3,4

Male to Female ratio was 2:1 similar to other Indian studies4 but higher than western literature.1 Infiltration Pattern of Marrow was interstitial in 13 (26%) nodular/focal in 19(40%) and diffuse in 18(36%). Results are comparable to other studies.3-9

Residual Hematopoiesis was significantly more in cases with mature plasma cell types (p-value=0.028) compared to other immature forms including plasmablastic, immature and intermediate.

All cases of plasmablastic cell type had a diffuse or nodular pattern of infiltration, whereas majority of the mature cell type had an interstitial pattern. Fibrosis was seen in 24% (12) cases. However, 4 out of 10 cases of plasmablastic (40%) showed fibrosis. Thus, suggesting a worse overall scenario in cases with plasmablastic cell type as previously described in other studies. 3-9

CONCLUSIONS

Prognostic factors that can be judged only by Biopsy include pattern of involvement, cellularity, residual hematopoiesis and fibrosis. Also amyloidosis is demonstrable.

Percentage of plasma cells, an important prognostic factor can be better assessed on BMB. Plasmablastic cell type is decisively associated with worse outcome.

These prognostic factors are important in a center where IL-6 and ß2 microglobulin assays are not available. Hence, BMB is integral in evaluation of every case of Multiple Myeloma.

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