World Academy of Science, Engineering and Technology
International Journal of Biomedical and Biological Engineering
Vol:12, No:05, 2018

Expression of Ki-67 in Multiple Myeloma: A Clinicopathological Study

Authors : Kangana Sengar, Sanjay Deb, Ramesh Dawar

Abstract : Introduction: Ki-67 can be a useful marker in determining proliferative activity in patients with multiple myeloma (MM). However, using Ki-67 alone results in the erroneous inclusion of non-myeloma cells leading to false high counts. We have used Dual IHC (immunohistochemistry) staining with Ki-67 and CD138 to enhance specificity in assessing proliferative activity of bone marrow plasma cells. Aims and objectives: To estimate the proportion of proliferating (Ki-67 expressing) plasma cells in patients with MM and correlation of Ki-67 with other known prognostic parameters. Materials and Methods: Fifty FFPE (formalin fixed paraffin embedded) blocks of trephine biopsies of cases diagnosed as MM from 2010 to 2015 are subjected to H & E staining and Dual IHC staining for CD 138 and Ki-67. H & E staining is done to evaluate various histological parameters like percentage of plasma cells, pattern of infiltration (nodular, interstitial, mixed and diffuse), routine parameters of marrow cellularity and hematopoiesis. Clinical data is collected from patient records from Medical Record Department. Each of CD138 expressing cells (cytoplasmic, red) are scored as proliferating plasma cells (containing a brown Ki¬67 nucleus) or non¬proliferating plasma cells (containing a blue, counter-stained, Ki-¬67 negative nucleus). Ki-67 is measured as percentage positivity with a maximum score of hundred percent and lowest of zero percent. The intensity of staining is not relevant. Results: Statistically significant correlation of Ki-67 in D-S Stage (Durie & Salmon Stage) I vs. III (p=0.026) and ISS (International Staging System) Stage I vs. III (p=0.019), β2m (p=0.029) and percentage of plasma cells ($p < 0.001$) is seen. No statistically significant correlation is seen between Ki-67 and hemoglobin, platelet count, total leukocyte count, total protein, albumin, S. calcium, S. creatinine, S. LDH, blood urea and pattern of infiltration. Conclusion: Ki-67 index correlated with other known prognostic parameters. However, it is not determined routinely in patients with MM due to little information available regarding its relevance and paucity of studies done to correlate with other known prognostic factors in MM patients. To the best of our knowledge, this is the first study in India using Dual IHC staining for Ki-67 and CD138 in MM patients. Routine determination of Ki-67 will help to identify patients who may benefit with more aggressive therapy. Recommendation: In this study follow up of patients is not included, and the sample size is small. Studying with larger sample size and long follow up is advocated to prognosticate Ki-67 as a marker of survival in patients with multiple myeloma.

Keywords : bone marrow, dual IHC, Ki-67, multiple myeloma
Conference Title : ICCCLM 2018 : International Conference on Clinical Chemistry and Laboratory Medicine
Conference Location : London, United Kingdom
Conference Dates : May 14-15, 2018