

The Prognostic Impact of Fluorescent-in Situ Hybridization (FISH) and Conventional Karyotyping in Korean Multiple Myeloma Patients: A Retrospective Multicenter Study

Sukjoong Oh¹, Jaehoon Lee²

¹*Departement of Internal Medicine, Sungkyunkwan University, Kangbuk Samsung Hospital, Korea,*

²*Gachon University, Gil Hospital, Department of Internal Medicine, Korea*

Introduction: Cytogenetics and fluorescent-in situ hybridization (FISH) are important outcome predictors in multiple myeloma (MM). There were only few small studies that investigated prognostic implication of FISH and/or conventional karyotyping in Korean MM patients. We investigated the incidences and prognostic significances of chromosomal abnormalities detected by FISH and/or conventional karyotyping among Korean MM patients. **Patients and Methods:** We collected data of patients from Korean Myeloma Registry and performed retrospective analysis. We compared the survival of patients with chromosomal abnormalities and other clinical findings.

Results: From 2000 to 2009, total of 801 newly diagnosed myeloma patients were enrolled in this study. Median age of patients was 62 years. Median overall survival was 82 months, and median follow up of time was 92 months. Among the patients who had conventional karyotype analysis, 17.1% were complex karyotype, followed by del13q (7.4%), hyperdiploidy (7.6%), hypodiploidy (3.0%), and t(11;14) (3.9%). Among the patients who had FISH analysis, 22.8% were del 13q, followed by t(11;14) (18.2%), t(4;14) (13.7%), del17p (11.8%) and t(14;16) (5.9%). Univariate analyses revealed that complex karyotype ($p<0.01$), hypodiploidy ($p=0.01$), del13q ($p<0.01$) by conventional karyotyping, and t(4;14) ($p=0.04$) by FISH negatively impacted the overall survival. Other genomic aberrations did not affect the overall survival. Clinical parameters that impact on overall survival were percentage of plasma cells in bone marrow, serum beta2-microglobulin, creatinine, low hemoglobin, and low albumin levels. On multivariate analysis, percentage of plasma cells in bone marrow ($p<0.01$) and low serum albumin level ($p<0.01$) were independent risk factors for overall survival.

Conclusions: Our results showed that complex karyotype, hypodiploidy, t(4;14), and del13q by FISH and/or conventional karyotyping were negative prognostic factors for overall survival in univariate analyses. On multivariate analysis, low serum albumin level and percentage of plasma cells in bone marrow were independent risk factors for overall survival. In future, prospective trial with laboratory standardization is warranted for more reliable results from FISH and/or conventional karyotyping in MM patients.