Characteristics and Clinical Outcome of Newly Diagnosed Transplant-ineligible Multiple Myeloma Patients Stratified by Cytogenetic Risk

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Background: Multiple myeloma (MM) diagnosis comprises of clonal plasma cells, one of the myeloma-defining events. Treatment selection depends largely on transplant eligibility. Prognosis relies on organ dysfunction, stage and cytogenetic risks classified as high risk (HR) and standard risk (SR).

Objective: To compare MM patients between HR and SR groups.

Methods: Newly diagnosed transplant-ineligible MM patients (NDMM) with cytogenetic test (2015–2017) were retrospectively analyzed for demographic data, organ dysfunction, type and quantitation of monoclonal protein (MAB), staging (I, II, III) according to international staging system (ISS) and revised ISS (R-ISS) stratified by cytogenetic risks and LDH level. HR in this study was defined by presenting of any one of del(17p), t(4;14) or t(14;16), gain of 1q21, or hyperdiploidy using standard chromosomal test and specific FISH probes. Front-line treatment and outcome were evaluated.

Results: Twenty-three NDMM patients (M:F 11:12) were reviewed with mean age of 64.35 years (52-79). HR group (n=10) showed presence of del(17p), t(4;14), t(14;16), gain of 1q21, and hyperdiploidy for 3, 2, 8, 3, and 1, respectively; 3 with multiple positivity. While, the mean value of age, creatinine (Cr), calcium (Ca), β2-microglobulin (β2M), and MAB level of HR group were 62.3 years (52–78), 1.41 mg/dl (0.62-4.1), 10.12 mg/dl (8.5-14.2), 5.83 mg/L (2.91-10.2), and 5.4 g/dl (1.41-9.05), respectively. MAB types were IgGκ (5), IgGTK (1), IgAK (3), and IgK (1). Patients stratified by ISS and R-ISS were 1, 3, 6 and 1, 6, 3, respectively. Front-line treatment included bortezomib-melphalan-prednisolone (VMP; 2), bortezomib-lenalidomide-dexamethasone (1), bortezomib-cyclophosphamide-dexamethasone (VCD; 2), MP (1), high dose dexamethasone (2), and no treatment (2). Evaluable outcome (9) for CR, VGPR, SD and death was 2, 2, 1 and 4, respectively. SR group showed mean value of age, Cr, Ca, β2M, and MAB level of 65.9 yr (55–79), 1.19 mg/dl (0.47-3.46), 9.31 mg/dl (8.4-10.8), 7.81 mg/L (1.52-25.6), and 3.8 g/dl (0.44-9.37; n 11), respectively. MAB types were IgGκ (6), IgGTK (3), IgAK (1), IgK (1), and λ light chain (2). Patients stratified by ISS and R-ISS were 2, 4, 7 and 2, 1, 0, respectively. Front-line treatment consisted of VMP (4), VCD (6), MP (1), VD (1), and VMD (1). Evaluable outcome (12) for CR, PR, SD and death was 1, 4, 3 and 4, respectively.

Conclusion: Treatment outcome in the HR group is worse than the SR group. More effective drugs are needed.

Keywords: Multiple myeloma, Cytogenetics, Treatment