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Role of genomics in multiple myeloma

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Abstract

Multiple Myeloma (MM) is a genomically and clinically heterogeneous, mature B-cell malignancy. Our biologic understanding of the disease has grown exponentially over the last decade and has led to major advances in developing novel agents to treat this cancer. Genomic tools such as microarray-based gene-expression profiling (GEP), micro-RNA profiling, florescent in-situ hybridization (FISH), RNA sequencing and hypomethylation profiling are emerging as a powerful tool to globally analyze the changes in expression patterns to study myeloma biology and clinical behavior. The disease can now be characterized in to specific molecular sub-groups that have different clinical features at presentation and therapeutic responses. GEP is now able to risk-stratify patients with newly diagnosed MM. Groups with high-risk features are evident in all GEP-defined molecular sub-groups, and GEP studies of serial samples showed increases in cumulative risk , with relapsed disease showing dramatic GEP shifts toward a signature of poor outcomes. Dissecting outcomes with different therapeutic regimens, GEP-defined disease sub-group and risk shows class-specific benefits for certain drugs, as well as mechanistic insight into drug sensitivity and resistance. The presenter will review the role of these new genomic tools in furthering our understanding of MM pathogenesis, prognosis, and treatment.

Biography

Saad Zafar Usmani, M.D., FACP is an Assistant Professor of Medicine at the University of Arkansas for Medical Sciences (UAMS) and also serves as the Director of Developmental Therapeutics at the Myeloma Institute for Research and Therapy at UAMS. Dr. Usmani received his medical education at Allama Iqbal Medical College Lahore, Pakistan. He completed a residency in Internal Medicine at Sinai-Grace Hospital/Wayne State University in Detroit, Michigan, and a fellowship in Hematology & Oncology at the University of Connecticut Health Center in Farmington, Connecticut. Dr. Usmani's clinical interest involves hematologic malignancies and stem cell transplantation. His academic focus is on research in the biology, pathogenesis and therapy of plasma cell disorders, with specific focus on clinical/translational investigations in high-risk myeloma (genomically-defined poor risk, plasma cell leukemia, extra-medullary disease, etc.). He is on the editorial review board of numerous medical journals, and has presented extensively at national and international meetings. Dr. Usmani is a member of the SWOG Myeloma Committee, International Myeloma Working Group, American College of Physicians, American Society of Hematology, the American Society of Clinical Oncology and the American Association for Cancer Research.