Saad Z. Usmani, MD, FACP
Chief, Plasma Cell Disorders Program
Director, Clinical Research in Hematologic Malignancies
Levine Cancer Institute/Carolinas HealthCare System, Charlotte, North Carolina
Clinical Professor of Medicine, UNC-Chapel Hill School of Medicine
Chapel Hill, North Carolina

What should be included in the diagnostic work-up of multiple myeloma patients?

Welcome to *Managing Myeloma*. I am Dr. Saad Usmani. I am frequently asked, “What should be included in the diagnostic workup of multiple myeloma patients?” My general answer to the community oncologist is, when we are faced with a newly diagnosed myeloma patient or a potentially newly diagnosed myeloma patient, there are certain lab tests, there are certain biopsy-specific tests, and certain imaging-specific testing that we need to consider.

From the lab test perspective, we are trying to assess the degree of anemia, so a complete blood count may be in order. Very rarely patients do present with low white blood cell and platelet counts as well, so those are also indices that we need to look at. The comprehensive chemistry panel, including calcium levels as well as serum albumin levels is important. We need to look at the renal function, so serum creatinine and blood urea nitrogen (BUN) levels are important from that standpoint.

Then, there are certain other diagnostic labs that will help us identify monoclonal protein. So, serum protein electrophoresis along with immunofixation, a 24-hour urine protein electrophoresis along with immunofixation, and a serum-free light chain assay are important tests that we need to do to identify and characterize what kind of monoclonal protein the patient may have. The protein electrophoresis can help us identify the serum or the urine M component, but the immunofixation part helps us recognize what kind of M-protein it is, if it is an IgG, IgA, and whether it is kappa or lambda.

Then, quantitative immunoglobulins are also important to measure at the time of diagnosis, and many times, they appear to be elevated for the involved heavy chain. If it is an IgG kappa myeloma, the IgG levels may be increased and the IgA and IgM may be suppressed. Same is true if it is an IgA isotype myeloma, then IgA will be elevated and IgG and IgM will be suppressed. So, those are certain important diagnostic tests that we need to do.

Then, serum beta-2 microglobulin helps us in prognosticating myeloma when we are using the Revised-ISS staging criteria. So, that is an important lab test. Bone marrow biopsies are important to do. Bone marrow aspirates are sent for flow cytometry, cytogenetics, as well as FISH panel for myeloma. Where available, a gene expression profiling signature such as MyPRS® or SKY-92 may be sent to identify high-risk patients that can then be channeled toward more specialized centers of care or for clinical trial purposes. Then, bone marrow biopsies also help us in looking at cellularity and the percentage of plasmacytosis in any given patient. Generally, skeletal surveys are the first imaging technique that we utilize. However in patients who have negative skeletal surveys, knowing the limitations of what the skeletal surveys can show us from the bone involvement perspective, we may get MRIs or PET-CTs in certain patients. So, I think in general, that is a long-winded yet detailed answer that I give to community oncologists on what to include when working up a newly diagnosed myeloma patient. Thank you for viewing this activity.