

MULTIPLE MYELOMA

Multiple myeloma is a disease of abnormal plasma cells that most often build up in the bone marrow. The cells form tumors in many bones of the body. The tumors may prevent the bone marrow from making enough healthy blood cells. Tumors can also damage the bones and cause too much calcium to be in the blood. This can cause serious health problems with the kidneys, nerves, heart, muscles and digestive tract.

Bone marrow normally produces stem cells that become red blood cells, white blood cells or platelets. Red blood cells carry oxygen and nutrients to all tissues in the body. White blood cells fight infection and disease. Platelets help stop bleeding by causing blood clots to form. Plasma cells are normally present in bone marrow but in very small numbers. They normally help fight infection and disease by making a protein called an immunoglobulin, or antibody. Having too many plasma cells can lead to anemia or extra risks of infections, because these cells crowd out the normal ones and prevent the marrow from working properly. Abnormal plasma cells can make large amounts of an antibody called M protein, or M-spike, which is not needed by the body. This protein builds up in the bone marrow and can cause blood to become thick or damage the kidneys. In rare cases, it may build up in other organs such as the heart, nerves, and digestive tract, causing damage there as well. This is called amyloidosis.

Risk factors: Multiple myeloma most often occurs in people who are in their mid to late 60's but can be found at any age. Other risk factors include being African-American, being male, having a brother or sister who has multiple myeloma, or being exposed to atomic bomb or other sources of radiation, or certain chemicals. Most patients do not have any such exposure history.

Symptoms to Report:

Bone pain, usually in the back or ribs	Bones that break easily
Frequent infections or fever for no known reason	Easy bruising or bleeding
Nausea or vomiting	Muscle weakness of arms or legs
Frequent or decreased urination	Loss of appetite and/or weight
Constipation, or other bowel habit changes	Feeling thirsty
Mental confusion or trouble thinking	Feeling very tired
Trouble breathing	Restlessness
Pain, numbness, burning, or other odd feelings in the hands and/or feet	

Diagnosing and Staging of multiple myeloma may involve some of these tests and procedures:

Blood tests include complete blood count (CBC), blood chemistry and antibody studies, and measurement of the amount of M proteins.

X-rays are used to find areas where bone is damaged.

Bone marrow biopsy is the removal of a small piece of bone, bone marrow, and blood through a needle inserted into the hipbone or breastbone. The cells will be examined by a pathologist for signs of cancer and chromosomal changes.

Twenty-four hour urine test is used to measure the amount of protein.

CT-scan, or Computed tomography, is an x-ray machine linked to a computer that takes a series of detailed pictures of areas inside the body. Injected dye enhances the contrast for tumors to show up on the CT scan.

MRI, or Magnetic Resonance Imaging, uses radio wave pulses to make images of spatial variations in the absorption and emission of energy between healthy tissue and tumors. It is especially useful for seeing the bones and spinal cord in myeloma patients.

PET scan, or Positron Emission Tomography, is a radiology procedure that makes images using glucose tagged with a small amount of a radioactive substance. Cancerous tissue appears brighter than normal tissue because it metabolizes more glucose and absorbs more of the substance. This is not usually needed for multiple myeloma patients.

Bone densitometry is an x-ray procedure to measure bone loss.

Multiple myeloma is diagnosed as **Stage I**, **Stage II** or **Stage III**. The stage generally reflects how many myeloma cells are in the body, and how aggressively they are growing. The number of myeloma cells is determined by the levels of hemoglobin, calcium, creatinine and M protein in the blood, and the amount of bone damage.

Treatment options and chances of recovery depend on the type of plasma cell cancer, the stage, whether M-protein is present and whether there is any kidney damage.

Treatment Options

Patients without symptoms may not need treatment because, unfortunately, multiple myeloma cannot be cured by conventional approaches. Management of symptoms for any stage of multiple myeloma is to slow or stop the growth of cancer cells. It can also prevent or relieve pain or other complications.

Treatment for multiple myeloma has to reach all parts of the body because the disease is spread through the blood-forming systems of the body. Treatment is usually with drugs given either by mouth or through a vein. Drugs used for treating multiple myeloma slow the rate of rapid cell division and tumor growth, disrupt the effects of M-protein on the bones, suppress the immune system, decrease the blood supply to tumors, and help to relieve symptoms.

Some patients receive radiation therapy to destroy multiple myeloma cells and relieve pain in local areas. Some patients may also have a stem cell transplant to replace bone marrow that has been destroyed by very high doses of chemotherapy or radiation therapy.

Other types of plasma cell cancers

Plasmacytoma

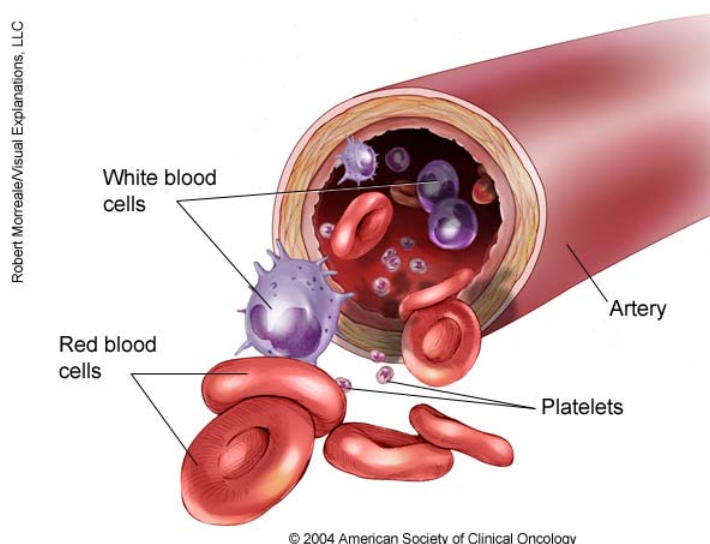
Abnormal plasma cells collect in one location and form a single tumor. Multiple myeloma is usually in the bone marrow, but in some cases, plasmacytomas can also form in soft tissues, such as sinuses and throat. If these are solitary lesions, they can be cured. Treatment is with surgery to remove the tumor and radiation therapy to nearby lymph nodes.

Macroglobulinemia

Abnormal plasma cells build up in bone marrow, lymph nodes and the spleen and make too much M-protein. This causes the blood to become too thick which can cause problems with blood flow to small blood vessels. Swelling of the spleen and lymph nodes can also occur. Treatment is similar to that for multiple myeloma.

Monoclonal gammopathy of undetermined significance (MGUS)

Abnormal plasma cells may be present in the bone marrow but they are not in very high numbers. The abnormal cells produce M-protein but the level does not change and there are no symptoms of illness. MGUS can become a more serious condition such as multiple myeloma or lymphoma in about one out of four people, so the treatment is "watchful waiting." This involves regular medical checkups and blood tests for levels of M-protein.



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