

# MULTIPLE MYELOMA

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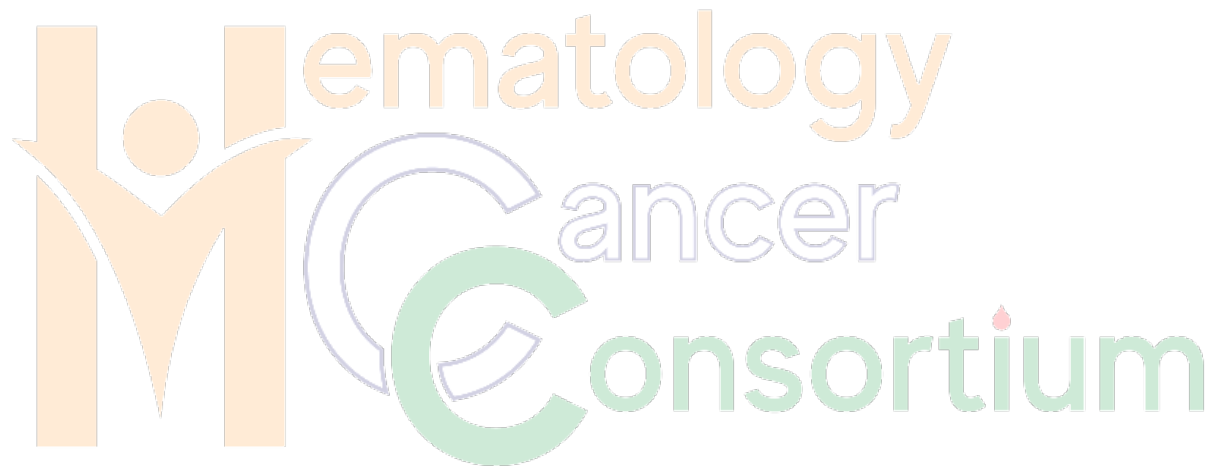
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- **What is multiple myeloma?**

Multiple myeloma is a type of blood cancer which occurs due to the accumulation of abnormal plasma cells. It is the second most common type of blood cancer.

- **What are plasma cells?**

Plasma cells are present in the bone marrow and form a part of the immune system. Plasma cells normally produce immunoglobulins (proteins needed to fight infection).

In multiple myeloma, these abnormal plasma cells form abnormal immunoglobulins called M-protein (monoclonal protein) in the blood. These abnormal proteins can block the kidneys. The accumulation of these plasma cells can crowd out the bone marrow. As a result, there is reduced space for normal blood cell development in the bone marrow leading to anemia (reduced red cells), infections (due to reduced white cells) and low platelet counts. The accumulation of these plasma cells can damage bones leading to bone pain and fractures.

- **Who can develop Multiple Myeloma?**

- Usually presents as the age advance.
- More common in men.
- Exposure to radiation or asbestos, benzene, pesticides, and other chemicals used in rubber manufacturing, prolonged exposure to wood products, and exposure to herbicides.
- Previous history of plasmacytoma or presence of M-protein in blood called monoclonal gammopathy of undetermined significance (MGUS). Every year, 1% of people with MGUS can develop multiple myeloma.
- Family history of multiple myeloma, especially in first-degree relatives (i.e., in parents, brother, or sister)

- **What are the symptoms of Multiple Myeloma**

- Tiredness and fatigue
- Bone pains, including bone fracture
- Limb weakness
- Confusion and excessive sleepiness
- Constipation
- Nausea and vomiting
- Increased urination and increased thirst
- Rarely, bleeding manifestations

Though these symptoms may be seen in multiple myeloma, they can occur in many other disease types.

- **How is multiple myeloma diagnosed?**

- **Blood Tests**

Tests done to check:

- The presence of abnormal myeloma protein called monoclonal protein (M-protein) in the blood and free light chains.
- Low hemoglobin, white blood cell and platelet count, and to look for the presence of plasma cells in the blood. The protein levels in the blood can be high for which total protein and its fractions- albumin and globulin levels are checked.
- Abnormalities in the kidney function, some patients can have raised blood urea and creatinine levels.
- Blood calcium levels because some patients can present with high levels which will require immediate treatment.

- **Urine Tests**

Test done to check for monoclonal protein (M-protein) in the urine called Bence Jones protein

- **Bone Marrow Examination**

Test done to check for the presence and quantify plasma cells. Depending on the percentage of plasma cells and other criteria, the patient might have only “monoclonal gammopathy of undetermined significance” or “smoldering multiple myeloma”, for which treatment may not be required, and the patients will only need to be observed.

- **Imaging Studies**

Test done to ascertain how many bones are affected by multiple myeloma. If the patient has limb weakness or severe back pain, an MRI spine will be ordered to look for spinal cord compression. These studies will also help the doctor in deciding if any surgical correction or radiation is needed for you.

- **How is multiple myeloma treated?**

Treatment of myeloma is prolonged, and is like the treatment of any long-standing disease like hypertension or diabetes. This includes a combination of tablets and injections for 4 to 6 months and a stem cell transplant using your own stem cells. Even after this, long term treatment is required to keep the myeloma under control.

Few types of medicines that are used in treatment of myeloma are as follows:

- **Steroids**

Steroids form an essential part of treatment for multiple myeloma. It can be given as an intravenous injection or as tablets.

- **Chemotherapy including Biological Therapy**

Chemotherapy/ biological therapy will be given as injections under the skin (subcutaneous) or intravenously (through a vein). There will also be tablets or capsules which you will have to take by mouth. Your doctor will provide the right chemotherapy schedules for you depending on your age and other risk factors.

- **Radiation Therapy**

Radiotherapy uses high energy, external X-rays to deliver radiation to the body. It is used for painful bone lesions or when some bone lesions in the spine threaten to cause spinal cord compression.

- **Peripheral Stem Cell Transplantation**

Stem cell transplantation using your own stem cells has become standard of care for myeloma. This procedure is effective after giving a few cycles of treatment to reduce the cancer load in your body. This treatment cannot be offered to all the patients. Depending on your age and comorbidities, your doctor will decide if you are fit for a transplant or not.

This procedure involves collecting stem cells in a procedure similar to blood donation. After collecting stem cells, high-dose chemotherapy will be administered. This is done to remove myeloma cells from bone marrow. Due to the high-dose chemotherapy, all the cells formed in the bone marrow will also be destroyed. Following this, the stem cells which were collected will be injected back into your blood like a blood transfusion. These stem cells will help with growing back all the cells in the bone marrow. The advantages and the risks involved can be discussed with your physician in detail.

- **Enrolling in a Clinical Trial**

There are a lot of developments in medicine and many new medicines are coming up for the treatment of myeloma. You can ask your treating physician if there are any clinical trials, especially for newer myeloma medicines which you could consider participating in.

- **Other Supportive Care Treatments**

- **Pain Medication**

Multiple myeloma can produce pain in the bones very often. Your doctor will prescribe you pain medications to control it. It is essential to continue these pain medications, which will help in your overall progress.

- **Physiotherapy**

You might need support to walk, such as a walker or a cane. For a weak spine, a spine brace might be provided. These could be temporary measures to support you during mobilization. It is essential to avoid injuries.

- **Bone Supportive Medications**

Injections are available to help in improving your bone strength. These injections can be given through the vein (intravenous) or can be given under the skin (subcutaneous). These injections will be given every month to every three months. It is essential to continue calcium and vitamin D supplementation as advised by your doctor. In some instances, your doctor might avoid giving calcium supplements.

- **Vertebroplasty or Kyphoplasty**

If you have a fracture or excessive pain due to collapse of a vertebral body which makes up the spinal column, cement will be injected into the bone to relieve the pain. These are minimally invasive procedures which can be done under image-guidance.

- **Blood-Thinners**

The medications given for treating multiple myeloma and the disease itself can sometimes produce blood clots, most commonly in your leg veins. Your doctor may prescribe blood-thinners to prevent this complication. However, if you are already predisposed to bleeding episodes, this medication will not be given.

- **Medications to Avoid Infection**

Due to the altered immunity caused by multiple myeloma and myeloma medications, you may be predisposed to infections, most commonly respiratory tract infections and shingles. Your doctor may prescribe antibiotics and antivirals from the start of treatment.

- **Vaccinations**

Before initiating treatment, your doctor might prescribe vaccines to prevent infections in future.

### **Psycho-Oncological Counselling**

You may wish to seek help from psychologists- this will help you cope better with the illness. If you are comfortable, you should consider continuing sessions with the psychologist for coping exercises and counselling.

- **What can I do to improve my health after a diagnosis of myeloma?**

- **Staying Active**

It is essential to stay active during treatment. You can check with your treating physician, orthopedic surgeon, and physiotherapist regarding the dos and don'ts. It would help if you considered doing deep breathing exercises and meditation to keep your mind healthy.

- **Eating Well**

It is essential to eat the right nutritious food. It will help reduce the fatigue and tiredness. Try and avoid or reduce spicy food intake, especially during the intake of steroids. If you are not feeling hungry, you should try and take small, frequent meals. By eating well, you are ensuring better immunity to help prevent and fight infections.

- **Drinking Plenty of Fluids**

It is essential to drink plenty of fluids to prevent further kidney damage.

- **Is multiple myeloma curable?**

Multiple myeloma is a chronic cancer, that is not curable with current chemotherapeutic options. However, significant medical advancements in the treatment of multiple myeloma have happened. Myeloma is now a disease where with correct diagnosis and treatment, majority of patients live long with excellent quality of life following all their routine activities. There are excellent supportive care medications to keep you comfortable

The support of your family, friends and treating team is vital for your progress. You should play an active role in your treatment decisions. All the above will help you lead a good quality of life. It is essential to reach your treating doctors for any information that you require.