Understanding Multiple Myeloma (MM)

Allogene THERAPEUTICS

Multiple myeloma (MM) is the second most common type of blood cancer and is characterized by abnormalities in plasma cells, a type of white blood cells.[1]

Lymphocytes are one of the main types of white blood cells in the immune system, and include B cells and T cells.[2] When B cells respond to an infection, they mature and change into plasma cells.[2] Plasma cells make the antibodies that help the body fight infections and other diseases, and are found mainly in bone marrow.[2]

B cell maturation antigen (BCMA) is a type of protein that regulates B cell proliferation and survival, as well as maturation into different plasma cells.[3] BCMA are more highly expressed in malignant plasma cells, particularly in MM.[3]

When plasma cells become cancerous, they reproduce uncontrollably in a person's bone marrow, which can crowd out normal cells and lead to low blood counts.[2] This can ultimately cause anemia, bleeding and bruising or problems fighting infections.[2]

Multiple Myeloma At-A-Glance

Multiple Myeloma is a rare cancer, accounting for **1.8% of all new cancer cases.**[4]

Estimated **32,270 new cases in 2020.**[5]

Estimated **12,830 deaths related to MM in 2020.**[5]

Between 2010–2016, Multiple Myeloma patients had a **53.9% 5-year survival rate.**[4]

Risk Factors

RACE

MM is twice as common among African Americans than white Americans.[6]

2X

MORE FOR AFRICAN AMERICANS

HISTORY OF OTHER PLASMA CELL DISEASES

Patients already affected by monoclonal gammopathy of undetermined significant (MGUS) or solitary plasma-cytoma have a higher risk of developing MM.[6]

FAMILY HISTORY

Someone with a parent or sibling who has MM is more likely to be affected.[6]

GENDER

Men are slightly more likely to develop MM.[6]

OBESITY

People who are overweight or obese have an increased risk of developing MM.[6]

<1%

OF PATIENTS ARE UNDER THE AGE OF 35[6]

AGE

MM typically affects an elderly population, and the risk of developing MM increases with age.[8]

MOST CASES OCCUR IN PATIENTS

65+[6]

Symptoms & Diagnosis

Symptoms of multiple myeloma vary by patient.[6] Oftentimes early stage multiple myeloma patients do not have any visible symptoms, or if they do they are vague or mistaken for other conditions.[7]

SYMPTOMS INCLUDE:[9]

- Bone pain
- Weakness or fractures
- Leukopenia (decreased ability to fight infection) or thrombocytopenia (bleeding or bruising due to low platelet count)
- Hypercalcemia (high levels of calcium in the blood)
- Low blood counts resulting in anemia
- Spinal cord compression presenting as muscle weakness
- Numbness or severe backpain
- Nerve damage
- Hyperviscosity
- Kidney infections
- Increased infection

Multiple myeloma can be difficult to diagnose.[10] Initial evaluation to confirm a multiple myeloma diagnosis includes a number of **blood tests, urine tests,** and a **bone marrow biopsy**.[7]

These tests, along with a physical evaluation, symptoms and medical history aid the diagnosis.[7]

Treatment

Although multiple myeloma is incurable for most patients,[3] there are treatment options available.[11]

Systemic treatments involve treating the multiple myeloma using drugs injected into the bloodstream or taken orally, to reach cancer cells anywhere in the body.[11] New targeted therapies such as proteasome inhibitors and immunomodulatory drugs have contributed to vast improvements in clinical outcomes for multiple myeloma patients over the past 20 years.[4] Other treatments include chemotherapy and stem cell transplant.[11, 12]

Most patients who receive treatment for multiple myeloma will experience a relapse or their disease will stop responding to treatment (refractory).[13]

Approximately **50 percent of patients survive 5 years after diagnosis**, demonstrating the significant need for new treatment options, particularly for the relapsed or refractory patient population.[4]

Given the prevalence and role of BCMA in MM, **researchers are currently exploring BCMA targeting for a number of potential new therapies** to address this unmet need.[3]

1. https://ghr.nlm.nih.gov/condition/multiple-myeloma# **2.** https://www.cancer.org/cancer/multiple-myeloma/about/what-is-multiple-myeloma.html **3.** https://www.frontiersin.org/articles/10.3389/fimmu.2018.01821/full **4.** https://seer.cancer.gov/statfacts/html/mulmy.html **5.** https://seer.cancer.gov/statfacts/html/mulmy.html **6.** https://www.cancer.org/cancer/multiple-myeloma/causes-risks-prevention/risk-factors.html **7.** https://themmrf.org/multiple-myeloma/symptoms-side-effects-and-complications/ **8.** https://www.cancer.org/cancer/multiple-myeloma/detection-diagnosis-staging/signs-symptoms.html **9.** https://www.mayoclinic.org/diseases-conditions/multiple-myeloma/symptoms-causes/syc-20353378 **10.** https://themmrf.org/multiple-myeloma/diagnosis/ **11.** https://www.cancer.org/cancer/multiple-myeloma/treating.html **12.** https://www.cancer.org/cancer/multiple-myeloma/treating/supportive.html **13.** https://www.lls.org/sites/default/files/file_assets/myeloma.pdf

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