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## What is Monoclonal Gammopathy of Undetermined Significance (MGUS)?

Monoclonal gammopathy of undetermined significance (MGUS) is a disorder caused by the production of an abnormal protein called monoclonal protein in the blood.

Monoclonal protein, also called M protein, is produced by a type of blood cell known as plasma cells which are found in the blood-producing soft tissues. These tissues are present at the centre of the bones, also known as the bone marrow.

### Is MGUS a form of cancer?

Most patients with MGUS do not experience any symptoms or complications. While MGUS itself is a non-cancerous condition, it can sometimes progress leading to the development of more serious diseases, such as:

- **Myeloma**, a cancer of plasma cells.

It is estimated that about 1 out of 100 patients with MGUS develop cancer each year. Most patients diagnosed with MGUS do not develop cancer or need any treatment.

Your doctor may recommend regular blood tests to assess the progress of MGUS and the early signs of cancer.

### What causes MGUS?

The exact cause of MGUS is not known. Environmental factors and genetic abnormalities appear to trigger the development of this disease.

MGUS may also occur when the functions of a type of white blood cell, called plasma cells, that formed in the bone marrow are affected. In healthy individuals, plasma cells produce proteins, called antibodies, that help to fight infections.

MGUS occurs when plasma cells produce abnormal antibodies called M proteins. M proteins usually do not interfere with the normal functions of plasma cells or cause any symptoms.

The factors that can increase the risk of MGUS include:

- **Age:** The incidence of MGUS is higher in older people. People under the age of 40 rarely develop this disorder.
- **Gender:** MGUS is nearly two times more common in men compared to women.
- **Ethnicity:** The prevalence of MGUS is higher in Africans, and African Americans compared to that in Europeans.
- **Family history:** If a close family member has MGUS, you have a higher risk of developing it.
- **Autoimmune disorders:** Some autoimmune disorders, including pernicious anaemia and lupus, can increase the risk of MGUS.

## What are the signs and symptoms of MGUS?

Patients with MGUS usually do not experience any symptoms. Some patients may develop skin rashes and symptoms of peripheral neuropathy such as tingling and numbness. Damage to the nerves due to M proteins may also reduce a person's ability to maintain balance, thus increasing the risk of falls.

## Diagnosing MGUS

Since MGUS usually does not cause any symptoms, detection typically happens during a routine health check-up.

When MGUS is suspected, your doctor may recommend some tests to confirm the diagnosis, including:

- Blood tests to rule out other causes of increased protein levels and check for renal damage.
- A 24-hour urine collection test to help determine the presence of abnormal proteins in your urine. This test can also help to assess kidney damage caused due to MGUS.
- Bone density tests to evaluate the extent of bone damage or bone loss linked to MGUS.

- Imaging tests such as MRI and PET (positron emission tomography) scans for patients who experience bone pain. The images of these tests can help the doctor detect bone abnormalities linked to MGUS.
- Bone marrow tests for patients who are at risk of developing serious complications or have unexplained anaemia, bone lesions, renal failure, or high calcium levels.

## Treatment and management of MGUS

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### Regular monitoring

Most patients with MGUS do not require any active treatment. You may need to undergo regular check-ups to monitor your health, usually starting six months after the diagnosis.

Frequent health check-ups can also help to assess the progress of MGUS and detect any complications at an early stage.

You should watch for signs and symptoms, including:

- Extreme fatigue
- Bone pain
- Unexplained weight loss
- Fever and night sweats
- Headache and dizziness
- Changes in vision and hearing
- Nerve pain
- Swelling in the lymph nodes, spleen, and liver
- Anaemia

### Medications

If you develop osteoporosis, your doctor may prescribe medications to increase bone mineral density.

## Are there any complications of MGUS?

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The complications that may occur due to MGUS include abnormal blood clots, bone fractures, and kidney problems.

Every year, about 1% of patients with MGUS develop blood cancers or other serious complications such as:

- Light chain amyloidosis
- **Multiple myeloma**
- **Lymphoma**
- Waldenstrom macroglobulinemia

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