Hypercalcemia of malignancy (HCM) is a condition that leads to increased blood calcium levels which is the result of an underlying cancer. This condition, if not treated, can lead to a decreased function in several organs. There are several treatment options available to assist with management, but the best treatment will be treating the underlying cancer.

In patients with cancer, there is approximately 10-30% of patients who will develop hypercalcemia. This incidence can vary among the various cancer groups with more aggressive cancers that have progressed to a stage IV, having a higher chance of developing hypercalcemia.

CAUSES OF HYPERCALCEMIA OF MALIGNANCY

HUMORAL HYPERCALCEMIA OF MALIGNANCY (HHM)
- MALIGNANT TUMORS PRODUCE PARATHYROID HORMONE-RELATED PEPTIDE (PTHRP)

LOCAL OSTEOYTIC HYPERCALCEMIA (LOH)
- DECREASED MOBILITY OR CANCER ATTACKS BONES

HYPERCALCEMIA DUE TO MULTIPLE MYELOMA
- TUMORS IN THE BONE DAMAGES THE KIDNEY

CALCITRIOL-MEDIATED HYPERCALCEMIA
- INACTIVE VITAMIN D IS CONVERTED TO ACTIVE FORM (CALCITRIOL)

BONES RELEASE CALCIUM INTO THE BLOOD

DIGESTIVE TRACT ABSORBS MORE CALCIUM FOR FOOD

KIDNEYS RETAIN CALCIUM AND RETURN IT TO YOUR BLOOD INSTEAD OF FLUSHING IT OUT IN YOUR URINE

Visit endocrine.org for more information.
Editors: Vivian Crowder, MSN, APRN, FNP-C, AOCNP; Benjamin Gigliotti, MD
Developed for patients based on Treatment of Hypercalcemia of Malignancy in Adults: An Endocrine Society Clinical Practice Guideline
**SYMPTOMS**

<table>
<thead>
<tr>
<th></th>
<th>MILD HCM</th>
<th>MODERATE HCM</th>
<th>SEVERE HCM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiovascular</td>
<td>Fatigue</td>
<td>Irregular heartbeat</td>
<td>Dangerous irregular heart rhythms</td>
</tr>
<tr>
<td>Gastrointestinal</td>
<td>Constipation and decreased appetite</td>
<td>Constipation, abdominal pain, nausea, vomiting</td>
<td>Constipation, stomach pain, nausea, vomiting, decreased appetite</td>
</tr>
<tr>
<td>Renal</td>
<td>Increased urine output</td>
<td>Increased urination and decreased renal function, and kidney stones can also develop</td>
<td>Rapid kidney failure, pain with urination, increased or decreased urination</td>
</tr>
<tr>
<td>Neurological</td>
<td>Mild confusion/fatigue, and anxiety/depression</td>
<td>Increased fatigue and mild altered mental status, and anxiety/depression</td>
<td>Lethargy (severe fatigue) and altered mental status (confusion)</td>
</tr>
<tr>
<td>Musculoskeletal</td>
<td>Mild bone and muscle pain</td>
<td>Moderate muscle and bone pain</td>
<td>Increased bone and muscle pain</td>
</tr>
</tbody>
</table>

**TREATMENT RECOMMENDATIONS**

Your treatment will depend on the cause of your high blood calcium. In general, the best treatment is to take care of the condition that is causing the high blood calcium, such as starting anti-cancer therapy. However, there are several medicines that can help lower blood calcium, independent of the cause, including:

**BISPHOSPHONATE:** Works by preventing the destruction of old bone which means calcium will not be released in the blood thereby preventing the blood calcium level from increasing

**DENOSUMAB:** Works similar to bisphosphonates and prevents bones by breaking down

**HYDRATION:** Increasing water intake will help the body get rid of extra calcium

**CALCITONIN:** A hormone made by the thyroid gland, which tell your kidneys and bones to change how they handle calcium thereby decreasing calcium levels

**QUESTIONS TO ASK YOUR HEALTHCARE PROVIDER**

What is the reason my calcium level is high?
How can we treat my calcium level?
Will I need surgery? Is so, who are the leading surgeons that perform this type of surgery?
What can I do to prevent my calcium from increasing again?
If I need dental surgery or any dental procedure, do I need to tell you before I receive treatment for HCM?