

Hypercalcaemia

About emergencies fact sheet

Hypercalcaemia is the presence of abnormally high levels (*hyper*) of calcium (*calc*) in the bloodstream (*aemia*). It commonly occurs in advanced cancers, in particular multiple myeloma, breast cancer and lung cancer.

Calcium is involved in the healthy functioning of every system of the body.

Normal blood levels of calcium are regulated by a hormone called parathyroid hormone, which is produced by small glands called parathyroid glands, found in the neck behind the thyroid gland (the Adam's apple).

Low levels of calcium in the bloodstream trigger the production of parathyroid hormone, which maintains normal blood levels by:

- regulating the absorption of calcium from our digestive system;
- controlling the release of calcium into the urine by the kidneys; and
- drawing on calcium stored in our bones.

When the calcium levels in the blood are returned to normal the parathyroid hormone production is switched off.

Some cancers produce chemical substances which mimic the effect of parathyroid hormone in the body, upsetting the normal carefully balanced mechanism, causing a release of excess calcium from the bones into the bloodstream.

An imbalance of calcium in the blood can cause many and varied signs and symptoms which can be subtle at first, and hard to distinguish from other causes.

Signs and symptoms:

- Loss of appetite;
- Nausea, vomiting;
- Constipation;
- Passing unusually large amounts of urine;
- Thirst, dehydration;
- Difficulty concentrating, depression;
- Fatigue, lethargy, weakness;
- Increased pain;
- Drowsiness;
- Confusion; or
- Unconsciousness.

The severity of symptoms is often related to how quickly the blood calcium levels are rising.

Management and treatment

Hypercalcaemia is diagnosed by a thorough medical assessment, and checking the level of calcium in the blood. The doctor may also want to check how well your kidneys are working.

Treatment aims to:

- flush the excess calcium out through the kidneys;

- stop the loss of calcium from the bones; and
- relieve the symptoms.

Treatment decisions depend on:

- How distressing the symptoms are for you;
- How well you were prior to developing symptoms; and
- Whether you want treatment or not.

Treatment of hypercalcaemia

Treatment of hypercalcaemia usually needs an admission to hospital and it will take a few days to get the calcium levels down to a safe level.

The main treatments are fluids and a type of drug known as a bisphosphonate.

Large volumes of intravenous fluid are used to:

- correct the underlying dehydration which often accompanies hypercalcaemia;
- dilute the calcium in the blood stream; and
- flush excess calcium out through the kidneys.

This is generally followed by an intravenous infusion of a bisphosphonate, which acts on cells in the bone to slow down the release of calcium.

Treatment with intravenous bisphosphonates:

- gives rapid relief of symptoms;
- usually restores blood calcium levels to normal within a week; and
- can make a dramatic improvement to a person's comfort and quality of life.

Preventative measures after the initial treatment of hypercalcaemia may include:

- Ongoing monitoring of blood calcium levels every 3-4 weeks;

- Treatment of the underlying cancer with radiotherapy or chemotherapy;
- Regular monthly or six weekly infusion of an intravenous bisphosphonate;
- Bisphosphonates in tablet form to stop the calcium building up in the blood again; and
- Fluid tablets can occasionally be used to flush calcium out of the system.

Things to consider

Side effects:

The use of bisphosphonates is not without side effects. Generally the medications are well tolerated and side effects are mild. However, recently a condition called *Osteonecrosis of the Jaw* has been found to be associated with the use of bisphosphonates.

This rare side effect is associated with slow or non healing ulceration/destruction of the jaw, particularly following tooth infection or extraction. Patients are advised to see a dentist for regular preventative dental care.

Treatment decisions:

Whether or not ongoing measures are put in place to prevent the hypercalcaemia from recurring depends on whether the initial management is successful and the stage of illness.

Sometimes the burden of treatment can place more stress on an individual than letting things be. Your decisions about whether or not to have treatment will be respected.

Sometimes the levels of drowsiness and confusion caused by the hypercalcaemia are such that others may need to make decisions on your behalf.

Discussion to clarify your wishes with your family and important others, as well as with your doctor and nurses, is invaluable.

It is important to know that if you decide not to have treatment, or you are at a stage of illness where it is not appropriate to have treatment, symptoms can be successfully managed and you can be comfortable.

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