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Hyperbaric Oxygen Therapy for Cancer Patients

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Fact Checked:

Hyperbaric oxygen therapy for cancer is a treatment during which the patient breathes pure oxygen in a pressurized room. This process is designed to promote healing. It may be useful in enhancing other treatments and healing damage caused by radiation therapy.

What Is Hyperbaric Oxygen Therapy?

Hyperbaric oxygen therapy involves breathing pure oxygen in a pressurized setting. The normal air we breathe only contains about 22% oxygen.

While people generally get enough oxygen from the air, there are health benefits to breathing air with a higher concentration of oxygen. Using pressure, either in a tube or an entire room, allows the lungs to take in more oxygen than they would at normal pressure.

The pressure may be as much as three times higher than normal atmospheric pressure during hyperbaric oxygen therapy.

What Are the Benefits of Hyperbaric Oxygen Therapy?

Hyperbaric oxygen therapy may be prescribed for several conditions, primarily to promote general healing. Oxygen is normally transported through the bloodstream to all parts of the body.

Oxygen promotes healing by stimulating the release of substances like growth factors and stem cells. The body also uses oxygen to fight infections and bacteria. More oxygen traveling through the body increases these processes, which promotes faster healing.

Infections and injuries require more oxygen to heal, making this type of therapy useful for speeding healing in specific situations. For example, someone with diabetes who is not healing properly from a wound may benefit from the therapy. Oxygen therapy can also help support the immune system as it fights serious infections.

What Is Hyperbaric Oxygen Therapy Used to Treat?

Some of the conditions hyperbaric oxygen may be prescribed to treat include:

- Severe anemia
- Arterial gas embolism
- Decompression sickness
- Radiation injuries
- Crushing injuries
- Brain abscesses
- Gangrene
- Severe bone and skin infections
- Carbon monoxide poisoning
- Sudden vision loss
- Sudden hearing loss
- Burns

How Does Hyperbaric Oxygen Help Mesothelioma and Cancer Patients?

Pressurized oxygen treatment has been used for centuries. As researchers gain a greater understanding of cancers, like mesothelioma, the usefulness and risks of hyperbaric oxygen have been debated.

Slowing Cancer Growth

Researchers have found some evidence suggesting pressurized oxygen therapy could inhibit cancer growth. For example, some studies show combining oxygen therapy with chemotherapy can slow cancer.

When there is inadequate oxygen there is some tumor resistance to chemotherapy drugs. Supplemental oxygen may decrease this resistance, making chemotherapy more effective.

Research results have been mixed; however, there is also evidence that hyperbaric oxygen can make radiation therapy more effective as well.

In these situations, hyperbaric oxygen is considered a radiosensitizing or chemosensitizing agent. Rather than directly impacting the tumor, it helps other treatments work better.

More recent studies have shown that hyperbaric oxygen therapy could change the tumor microenvironment, resulting in slower growth. A study using cell cultures from mouse tumors found that the therapy resulted in greater cancer cell death.[4]

Photodynamic Therapy

Photodynamic therapy, an emerging treatment for mesothelioma and other cancers, also shows great promise. In this therapy, a drug is activated by light and injected into the body where it attacks cancer cells.

The procedure avoids many of the side effects of chemotherapy and radiation and is minimally invasive. Photodynamic therapy is often given under hyperbaric oxygen conditions because the drug relies on oxygen to target cancer cells.

Healing Injuries Caused by Radiation Therapy

Sometimes cancer patients are injured by treatment. Radiation therapy, for example, can cause serious injury. Hyperbaric oxygen therapy can help heal these injuries. Surgery can also cause wounds that may lead to infection or can be difficult to heal. Oxygen treatment can improve both of these issues.

What to Expect with Hyperbaric Oxygen Treatment

Your doctor may suggest hyperbaric oxygen therapy as an option for you. If so, you will be treated with either a one-person unit or a hyperbaric room. In either case, the therapy is non-invasive and pain-free. The therapy is performed on an outpatient basis.

Here's what to expect:

- In a one-person unit, you will lie down on a surface that slides into a tube, much like a CT machine. This can be uncomfortable if you feel claustrophobic.
- A hyperbaric oxygen room is larger and can accommodate multiple people. These rooms look much like any hospital room. You may either sit or lie down during treatment.
- A nurse or technician will fit you with a mask or a plastic hood that delivers the oxygen. If you feel uncomfortable in confined spaces, this may be a better option than a one-person unit.
- You will feel pressure in your ears during treatment, but it is not severe. It feels much like the pressure changes you experience when flying in an airplane. You can get relief by yawning or swallowing.
- Treatment usually lasts up to two hours.

Is A Hyperbaric Chamber Safe for Cancer Patients?

Hyperbaric oxygen therapy is considered generally safe. There are a few risks of adverse events, but they are rare. These risks include temporary changes in vision and injuries to the ear from increased air pressure.

In extreme situations, there is a risk of a collapsed lung, seizures, or fire. The risk of fire is due to high oxygen levels in the room or unit. Because of this risk, you will need to be clean of any petroleum-based products, like lotions.[1]

Can Hyperbaric Chambers Cause Cancer?

Some people have been concerned that oxygen therapy could actually stimulate cancer progression because oxygen is essential to many of the processes involved in tumor growth.

Research has confirmed hyperbaric oxygen therapy does not promote tumor growth. It also does not increase the risk of cancer recurrence.

Who Should Not Use Hyperbaric Oxygen Therapy?

The risks of hyperbaric oxygen therapy are low, but some people should not use it. For instance, if you have had recent surgery or an injury to your ear, the pressure can be a problem.

Hyperbaric therapy is also contraindicated for people with a cold, a fever, or certain types of lung conditions.

Researchers are continuing to study how useful hyperbaric oxygen can be for cancer patients, including those with mesothelioma; so far results are promising. In addition to helping patients heal and relieving side effects, this procedure can make chemotherapy and radiation treatments more effective. Hyperbaric oxygen therapy is a relatively simple procedure with few risks that are well tolerated by most patients.