

The Benefits of Hyperbaric Oxygen Therapy for Late Effects of Radiation

Radiation therapy is a common and highly effective treatment method for many cancers. And, as with any medical treatment, it comes along with side effects. One research study reported that serious radiation complications occur in 5% of patients receiving radiation therapy. In this post we'll explore radiation injuries and side effects and consider how hyperbaric oxygen therapy, often referred to as HBOT, can aid in the healing process.

What Is Radiation Injury?

While radiation therapy destroys cancer cells, it has the potential to damage otherwise normal tissue in the vicinity of the treatment area. Clinicians refer to this overall group of conditions as cutaneous radiation injury (CRI).

The skin, as well as underlying tissue, is particularly sensitive to radiation injury. These skin injuries, including a condition called radiodermatitis (or radiation dermatitis), is on the rise.

"Radiation injuries solely to the skin in interventional procedures have been increasingly reported since the 1990s," Sadanori Akita, MD, PhD, writes in his *Advances in Wound Care* journal article, "[Treatment of Radiation Injury](#)."

A skin radiation injury can appear in many forms, from blistering and flaking to deep, secreting ulcers. Other areas prone to radiation injury include those associated with cancers of the brain, breasts, anus, and soft tissues.

While radiology departments often manage pain and injuries associated with radiation therapy, in many cases, especially those involving complex sores, a patient could be referred to a surgeon or specialized wound clinic for a radiation injury.

What Are Late Effects of Radiation?

In addition to injuries that occur early in someone's radiation treatment, others take longer to develop. For instance, some tissue damage remains undetected for a long time. Aply referred to as "late effects of radiation," these can also include:

- Bladder or bowel dysfunction
- Dental problems
- Enteritis/proctitis/colitis/cystitis
- Hematuria
- Hypothyroidism
- Intestinal inflammation
- Lower colon damage
- Lung disease
- Memory problems
- Osteoporosis
- Rectal bleeding

The CDC reports that late effects of radiation can come months to years after the initial exposure.

Radiation therapy has helped cure cancer in millions of patients; yet, while cancer-free, many will later struggle with its adverse side effects; and more and more people are seeking HBOT to heal from radiation injury.

Benefits of Hyperbaric Oxygen Therapy for Radiation Injury & Late Effects of Radiation

Before looking into how HBOT helps in cases of radiation injury or late effects of radiation, let's review the therapy itself.

What is Hyperbaric Oxygen Therapy (HBOT)?

HBOT, perhaps best-known to the general public for its association with helping deep-sea divers recover from being underwater, is a treatment that exposes the patient to 100% oxygen. Aside from decompression sickness, in its earlier uses, HBOT treated carbon monoxide poisoning.

The hyperbaric oxygen chamber was developed to provide this pure-O₂ therapy in a safe healthcare setting. The HBOT chamber is an immersive environment where 100%, pressurized oxygen is delivered to patients. Billings Clinic has two, outpatient, monoplace or 'one-person' chambers.

HBOT for Radiation Injury & Late Effects of Radiation

About one-third of patients in the United States who've received hyperbaric oxygen therapy were being treated for late effects of radiation therapy. As we've shared, HBOT is successful in treating and healing a variety of complex wounds, including thermal burns, necrotizing infections, compromised grafts and flaps, soft tissue or bone injury, ulcers, and other indications. But why and how does it work?

Oxygen is necessary to the wound-healing process in many ways, including:

- reducing swelling
- improving connective tissue quality
- creating new skin cells
- increasing white blood cell function
- increasing human fibroblast proliferation
- growing new blood vessels
- fighting toxins and bacteria
- augmenting stem cell mobilization

HBOT proves its versatility with the growing body of research surrounding its additional benefits. For example, one study of late effects of radiation showed improvement of symptoms after HBOT was noted in 75% of head-and-neck, 100% of pelvic, and 57% of "other" subjects. Bone and bladder symptoms were most likely to benefit from HBOT (response rate, 81% and 83%, respectively).

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