



COPING WITH RADIOTHERAPY

These days, cancer is not a death sentence. Many of the cancers that could not be survived 30 years ago are now curable. Radiotherapy is often part of the cure and can be combined with surgery and / or chemotherapy. Sometimes radiotherapy can be prescribed to extend life or treat the pain of a spreading cancer.

Whatever the situation, your oncologist (cancer specialist) is the expert on this treatment and how it may affect you.

Radiation therapy is usually in the form of a very small wavelength of light energy called gamma radiation. This is at the very small end of the light spectrum. If you wanted to put this very small wavelength in perspective, it may help to know that the next biggest wavelength is X Rays, then ultraviolet rays, the visible light, then infrared rays, then radar, then Microwaves, FM radio, then TV, then shortwave, then AM at the top end.

Radiation therapy is designed to damage cancer cells and kill them. It does this by damaging the DNA (proteins in the nucleus), cell membranes, and by creating a lot of free radicals that steal electrons and damage molecules in cells. The problem is that normal cells are often affected as well and so the skin and nearby organs can receive "bystander damage".

The ideal situation would be to find a way to optimize the cancer killing effect of radiation while protecting the normal cells.

Early reactions to radiation therapy can include redness and swelling of the skin along with tenderness. Any other local side effects depend on where the radiation has been given. For example, if it's the chest or breast, there could be an effect on the heart, blood vessels may thin, and the arm on that side might swell as well as possible stiffness and shoulder pain. Any damage to nerves, bone or cartilage in the area could cause pain too.

If it involves the areas of the mouth, oesophagus (food pipe), or bowel, there would be an effect because the cells in these tissues are rapidly dividing so are damaged by the radiation. The result is that these areas can become inflamed and sore and so the person may find it painful or difficult to eat and digest.

Longer term side effects of radiation can include thinning or fibrosis (hardening up and loss of elasticity) of tissues. This may affect the skin, pericardium (membrane around the heart). These effects on the heart can lead to coronary artery disease as well as effects on the valves and heart muscle and the effects increase with the years after the radiation.

Radiotherapy can also cause nutritional deficiency. Vitamin B12 and calcium deficiency have been recorded.

It is important to remember that if you have been prescribed radiotherapy, it is for your overall benefit and in many cases is life saving. When viewed overall, the benefits generally outweigh the risks of side effects. However, it would be ideal if the side effects could be prevented or reduced. The notion of taking antioxidants during radiotherapy is worrisome to cancer specialists because

these antioxidants could also protect the cancer cells, so there is a dilemma! Patients are advised against taking large doses of antioxidants like Vitamin C during a course of radiotherapy.

The ideal situation would be to have something that helps the radiotherapy work even better at killing cancer cells while protecting normal cells. There has been some research in this area suggesting a few substances could be useful in the future:

Genistein is found in soy foods and increases the sensitivity (vulnerability) of cancer cells to radiation while protecting normal cells.

Aspirin and quercetin (found in some vegetables) sensitize cancer cells to radiation while reducing inflamed mouth or gut membranes.

Statin drugs reduce inflammation of the bowel and fibrosis of the lungs.

ACE inhibitor drugs used for blood pressure and heart failure (cilazipril etc) protect the kidneys, optic nerves and lungs

Curcumin (found in tumeric) sensitizes cancer cells to radiation and chemotherapy and protects the liver, kidney, oral membranes and heart from toxic effects.

Vitamin E succinate enhances damage to cancer cells while protecting normal cells. It can be used as a cream on radiation exposed / damaged skin.

Luteolin (in vegetables and leaves) also sensitizes cancer cells to radiation.

Oxygen can act as a sensitizer because cells that are low in oxygen are resistant to radiation. This is why exercising as much as possible may be useful.

Herbs that have been studied include:

Withania somnifera (Winter cherry, Ashwaghandha) protects the heart from doxyrubicin chemotherapy, is a sensitizer of cancer cells to radiotherapy and is anti cancer.

Korean Ginseng may protect against damage from radiotherapy and chemotherapy.

To be completely safe with any of the abovementioned supplements, it is wise to discuss with your cancer specialist when they think its safe to try them. This will usually be after the course of radiotherapy is finished.

What you can do to generally support yourself around the time of radiotherapy:

1. Get support from family and friends
2. Maintain a healthy diet with adequate protein and a large variety of different vegetables. Include soy foods.
3. Get as much exercise as you can tolerate. This can help the fatigue that up to 80% of patients get.
4. Keep optimal control of any other health conditions like hypertension, diabetes or heart disease.
5. Correct any nutritional deficiency eg Vitamin B12

6. Continue your normal medications unless advised otherwise by your specialist.
7. Don't smoke!
8. Foods like liver, kidney and heart can help DNA repair and may be useful after the radiation is finished.
9. Taking any type of antioxidant around the time of radiation is controversial. Check with your specialist.
10. Restart fish oil and a general multivitamin when the treatment has finished.
11. Gut repair can be helped by taking glutamine and digestive enzymes can help digestion if this area has been affected.

References

Cancer. The importance of clinical nutrition in prevention and treatment. Henry Osieki. National Library of Australia

Herbs and Natural supplements 2nd ED. Lesley Braun, Marc Cohen. Churchill Livingstone