

C A N C E R

Knowing how the body reacts to radiation and chemotherapy is vital to providing your clients with the best care possible.

By Debra Curties

T H E R A P I E S

The large majority of massage clients who have cancer will have a history of, or current involvement with, one or more types of cancer treatment. These selected sections from my book, *Massage Therapy & Cancer*, are designed to help provide a foundation for understanding common medical approaches to treating cancer. Beyond assisting the practitioner to empathize to some extent with the experience of the client, such understanding is also important for massage treatment planning.

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The Use Of Radiation Therapy

The aim of radiation therapy is to render cancer cells sterile, or incapable of reproduction. Radiation exposure can cause immediate cell death if the dose is high enough, but it is not safe or necessary to attempt to kill all cancer cells present as long as enough damage can be inflicted to stop proliferation.

Most radiation treatment protocols

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are organized in regularly spaced sessions (for example, five days on, week-end rest period, five more days, and so on) to attain a cumulative dosage deemed most destructive to the cancer. Radiation is considered best suited to small tumor situations, and is frequently used to 'clean up' after surgery, or before surgery to shrink a tumor to a more operable size.

It is still not certain exactly how radiotherapy affects the cell. It either disrupts existing DNA, RNA, or proteins in the cell, all of which are essential for cell replication, or it interferes with synthesis of these products. Several drugs have been found to enhance cellular radiosensitivity, and may be used as part of the treatment protocol.

At a certain dose threshold, all cells sustain some degree of radiation injury. Particularly vulnerable are cells in the process of reproducing. In addition, each type of cell has its own sensitivity level for sterilization, so dosages must be determined by the cancer type.

The difficulty is that all cells in the irradiated zone will be affected by the treatment—especially if they are replicating—since the cancerous cells cannot be separately targeted. The argument for the usefulness of radiation is based on these rationales:

- The ratio of cells that are reproducing at any given point is generally much higher in cancerous growths than in normal tissues, making them

more vulnerable to the radiation.

- Normal tissues, which are organized into functional structures, are believed to be better able to cope with cell loss, and more capable of replacing missing cells in a purposeful way. Cancer masses do not reconstruct themselves as a unit following cell loss; they simply keep proliferating as they are able.

Limitation on radiation doses is ultimately determined by the tolerance of the normal tissues. It would not be meaningful to eliminate the cancer if life can't be sustained, or if remaining vital tissues are damaged beyond a reasonable capacity to return to function.

Radiation therapy is controlled as carefully as possible to restrict normal tissue exposure. Radiation sites are ink-marked or tattooed for future reference, and these marks must not be tampered with for the duration of the treatment plan.

The most common effects of radiation on normal tissues are: skin

lesions, which are in essence burns with associated pain and inflammation followed by epidermal desquamation and itching; localized hair loss; bone marrow suppression; enteritis, possibly with vomiting or diarrhea; mucous membrane irritation or suppression (for example, sinus congestion or dryness if the face is irradiated); and the possibility of glandular dysfunction. Generalized fatigue, a result of the overall drain on the body's resources, is usually reported by individuals undergoing radiation treatment. These occurrences are all expected to resolve in time after the treatment ceases.

Some more long-term, or perhaps permanent, tissue changes can be seen following radiation therapy. The affected skin surface may remain hypersensitive to temperature and pressure for some time. There may be permanent weakening of local bones and soft tissue structures (for example, tendons, joint cartilage). Radiation of the vital organs, whether direct or indirectly—lung and heart tissue may be exposed to radiation during breast cancer treatment, for example—can result in reduced function. Some risk of later development of radiation-induced cancer in the treated normal tissues is always present. Also, radiation of the ovaries or testes frequently results in infertility.

The Use Of Chemotherapy

The goals of chemotherapy are similar to those of radiation therapy. Chemotherapy is the use of chemical agents (antineoplastics) to kill or sterilize cancerous cells. Many of these agents are toxic substances that promote desired types of cell damage. Hormonal manipulation of tumor cells is also used.

Chemotherapy is employed in similar circumstances and often in conjunction with radiation. Because the antineoplastic substance enters the general circulation, chemotherapy is most likely to be incorporated into the treatment protocol if the cancer is disseminated, or if the risk of existing metastasis seems high. Although

Key Effects Of Radiation And Chemotherapy

Listed below are some of the effects of radiation and chemotherapy, especially in combination, that are particularly noteworthy for a massage therapist treating a cancer patient:

- Tissue fragility, especially of epithelial structures like skin;
- A tendency to hemorrhage, perhaps with reduced clotting ability;
- Risk of thromboembolism;
- Increased risk of infection;
- Slower healing times;
- Fatigue and malaise, with the possibility that standard massage treatment approaches may be overtaxing;
- Electrolyte imbalances that can result in cardiac dysrhythmias or altered neuron firing (possibly producing alterations in alertness or mood, sensation, reflex responses, muscle power, coordination, pain levels);
- The possibility of weakness or overstress of one or more of the vital organs;
- Pain.

most often given intravenously, the agents may be administered orally, intra-arterially, or intramuscularly, usually in a schedule designed to create a cumulative sublethal dose that is as high as possible.

There are some instances in which chemotherapy is used to treat a tumor locally. Substances may be injected directly into the tumor. A technique called perfusion recirculation also may be employed. In this procedure, the individual's blood is recirculated through the tumor vicinity by means of a circulatory loop created through an equipment linkage between local arterial and venous channels. The chemotherapeutic substance is injected into the loop. Although some entry of the agent into the general circulation will occur, a highly concentrated dose

can be directed at the tumor. This type of regional treatment is not as common as the generalized applications, however, where all body tissues are exposed as the agent circulates.

Certain cell types are more sensitive to specific cytotoxic (cell damaging) agents, and the antineoplastics used are determined as much as possible by the cancer type. Refinements in chemotherapy are leading to improved "targeting" of tumors in some cancers, where the abnormal cells are actually being attacked on the basis of their particular chemical properties or hormonal vulnerabilities. In most cases, however, it remains true that all cells in the body are subject to damage. Treatment rationales are essentially the same as for radiation therapy. Dosages are carefully controlled to provide maximum sterilization of cancerous cells within the limits of what can be tolerated by the normal tissues.

Individuals receiving chemotherapy treatment usually experience side effects of varying severity. Typical side effects include: nausea, vomiting, and diarrhea; hair loss; inflammation and bleeding in structures lined by rapidly reproducing epithelial cells such as the respiratory and digestive tracts; pronounced fatigue and malaise; pain; immunosuppression; and bone marrow suppression, with the possibility of sufficient loss of red blood cell production to induce severe anemia. Fear

infertility, induced menopause, arthritic changes in joints, and a degree of vital organ damage that may or may not be clinically significant.

Radiation Therapy: Massage Therapist Concerns

Radiotherapy programs may extend over weeks and perhaps months, usually in "on" and "off" intervals. Are there any guidelines for the massage therapist about how to interact compatibly with this type of treatment protocol? Unfortunately, to date no studies have been undertaken that would help clarify the ideal treatment relationship. We must proceed by exercising our best judgment given the known factors.

Radiation is focused as specifically as possible on identified tumor sites, and does not automatically preclude massage treatment of non-irradiated tissues. However, general symptoms like fatigue and nausea may delay massage therapy or alter the treatment approach.

Massage treatment of recently irradiated tissues poses some serious concerns; it must be considered very carefully and with full medical consultation. In the "on" phases of a treatment program, the skin and other normal tissues are being damaged. Radiation injury has a progressive nature due to the slow release of free radicals in the

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of the secondary effects of chemotherapy may be a significant factor in itself, inducing a high level of anxiety and perhaps exacerbating symptoms.

Long-term effects of chemotherapy frequently include such conditions as

affected tissues. (Consider the way a sunburn develops during the day or so following the exposure.) Depending on the body part or angle of irradiation, there may be a burn on the "exit" surface as well.

Cancer and Massage

The person receiving radiation therapy is prohibited from using most lubricants on the affected skin surface(s) because of the risk of increasing the burn damage. The massage therapist must take careful note of the instructions that have been given. One will encounter a range of medical approaches from prohibition of any substances except talcum powder, to permission to apply a special cream only, to limited use of water at skin temperature. Any scratching or rubbing (no matter how desired) is typically strongly discouraged.

It would seem reasonable to suggest that massage therapists decide upon the following guidelines:

- Seek medical consultation about the advisability of on-site work at any time during the treatment protocol;
- Comply with all restrictions on lubrication and touch;
- Pay careful attention to infection control;
- Completely avoid any on-site approaches during “on” phases, with a two- to three-day wait into the “off” phase to allow the burning process to subside;
- Consider carefully the healing needs of the skin and superficial tissues for at least the next seven to 10 days, for example, avoid excessive “tugging” on neighbor tissues;
- No on-site work at any time when the skin surface is blistered or broken;
- Wait seven to 10 days following skin repair before beginning any focused specific on-site massage work;
- Have an ongoing awareness of tissue damage at the site, some of which will resolve and some become permanent.

In the long term, previously irradiated skin may continue to be sensitive to sun, pressure, hot/cold, and other stimuli for many years. Joints frequently experience ongoing arthritic changes, and fascial structures (for example, tendons) may be permanently weakened. Bones, especially more fine bones like ribs, may be less resilient to pressure. Any history of radiation thera-

py should signal the massage therapist to carefully consider the current status of the affected tissues.

With respect to the potential for radiation injury to the therapist, it is generally believed that being with and touching someone who has received radiation therapy does not pose any significant risk. The exception would be an individual with an implanted radioactive source. This form of treatment is used rarely and always in a controlled hospital environment. Massaging under

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these circumstances would be risky for the massage therapist and would be prohibited by hospital policy.

Chemotherapy: Massage Therapist Concerns

With chemotherapy, unless regional methods are being used (in which case considerations analogous to those for radiation might be most appropriate), the massage therapist must be aware that the treatment effects are generalized. For example, the tendency of chemotherapy to damage rapidly reproducing tissue types means that skin and blood vessels are likely to be more fragile throughout the body.

Once again, the schedule of chemotherapy treatments will typically be “on” and “off,” with most individuals experiencing cycles of illness and recovery throughout the weeks or months of treatment. The massage therapist must consider the possibility that massage treatment could have a debilitating effect. This type of enervation response might result from:

- The potential for more rapid metabolism of the cytotoxic agent, making the person feel more ill;

- Overtaxing the fatigued individual when a rest period could be more beneficial;
- Overload on vital organ systems.

Medical consultation is very important to ensure that the timing and design of the massage treatment plan maximizes the safety and well-being of the client.

Some distinction is appropriate between relaxation-enhancing touch (light massage) and a longer-duration, multiple-component massage treat-

ment. The latter is probably too taxing during and immediately following “on” phases of chemotherapy. However, some nursing research has been conducted on the effects of “slow stroke back massage” during chemotherapy treatments to reduce nausea, anxiety and muscle tension. Such studies^{1,2,3} have examined the effects of gentle-stroking back massage, averaging three to 10 minutes in duration, on the symptoms experienced. Consistently, subjects report reductions in nausea, anxiety and overall symptom distress, along with an improved sense of well-being. In one study² this result appeared to be enhanced in clients with previous massage experience. Massage therapists could therefore offer this type of modified treatment to clients in chemotherapy, or show their family members how.

It may be fitting to incorporate a two- or three-day rest period before beginning more standard forms of massage therapy with someone just completing an “on” phase of chemotherapy. A more extended period of rest or modified treatment may be advisable if the individual is particularly

ill or debilitated. The appropriateness of treatment should be considered in a fresh light after each “on” phase of a chemotherapy protocol, since the client may be more ill or weakened after, for example, the fifth session than the first. More vital organ system dysfunction may also be present.

As the person recovers after completion of a chemotherapy protocol, it should be kept in mind that fatigue and low energy levels may persist for some time. As well, permanent joint degeneration may have occurred, and clinically significant vital organ damage may be present.

In addition to the concerns offered above for compatibility with radiation and chemotherapy protocols, the massage therapist needs to take into account other considerations consistent with post-surgical situations, and general guidelines that apply when a client has cancer. These are outlined elsewhere in this article as well as others in this Special Cancer Section. ❧

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The article above was excerpted from *Massage Therapy & Cancer*, a text published in 1999 by Curties-Overzet Publications (1-888-649-5411). Debra Curties, a massage therapist since 1984, has been an instructor at Sutherland-Chan School & Teaching Clinic in Toronto since 1985. Her main instructional subject area is Pathology & Clinical Theory. She also is executive director and one of the owners of Sutherland-Chan. In addition, Curties has been actively involved in the massage therapy profession as a volunteer. Among her numerous roles and projects, she served as AMTA Council of Schools president from 1995-1997. She is the 1998 recipient of the Ontario Massage Therapist Association's Meritorious Service award, and the 2000 recipient of the AMTA COS Meritorious Service award. She also is the author of *Breast Massage*.

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