

# Could Massage Therapy Promote **CANCER** Metastasis?

This article provides new insights to this serious concern, which often has prevented affected patients from receiving massages.

By Debra Curties

Cancers spread from the original tumor site by four mechanisms:

- Progressive direct local invasion of nearby structures;
- Through body cavities;
- To distant sites via the bloodstream (hematogenous metastasis);
- To distant sites via the lymphatic system (lymphogenous metastasis).

The processes involved in metastasis are highly complex, and still incompletely understood despite a great deal of research. This ongoing research is motivated by the fact that metastasis is almost always what causes cancer death. "Modern surgery and/or radiation therapy successfully eradicates the majority of primary tumors, but the inability to control metastases

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is the principal reason why there has been little progress in reducing cancer mortality in the last 30 years.”<sup>1</sup> This statement, written more than a decade ago, still holds an unfortunate degree of truth, and explains why prognosis typically is based on degree of, or likelihood of, metastasis in a case.

The majority of lethal cancers involve blood circulation metastasis. Currently, there is a good prognosis with prompt treatment in cancers limited to local lymph node spread, but with increasingly distant lymphogenous metastasis the survival rate decreases, especially as the neoplastic cells eventually join the bloodstream.

Massage therapy and associated modalities such as hydrotherapy and remedial exercise can act as strong stimuli to blood and lymph flow, so it is important to take a serious look at whether massage therapy could promote metastatic processes.

The set of events and possibilities in distant metastasis is complex. At each stage the body's defense systems are capable of eradicating the malignant cells. Evidence suggests that far more are killed than survive. The “successful” cells overcome a harrowing set of challenges. In one study (Fidler, 1978)<sup>4</sup> where injected radiolabeled cancer cells were monitored, most cells were destroyed within 24 hours, and after three days less than 0.1 percent remained viable. This result has been substantiated in several high-quality studies.<sup>5</sup>

We can only surmise the role massage therapy could play in these events,



**Stage 1: Cells Shedding From The Primary Tumor**

*Cancer cells are shedding from the tumor, and entering lymph and blood capillaries.*

since research on the subject has not been conducted. Clinically based consultation with physicians, and careful examination of known data, permits some presumably reasonable conclusions to be drawn. It must be noted,

however, that the current lack of certain knowledge may pose some degree of risk to our clients.

We will consider the metastasis process to be occurring in three principal stages, and examine the

## Events in Distant Metastasis<sup>2,3</sup>

### Hematogenous Spread

- Cell shedding from the primary tumor.
- Poor quality of tumor blood vessels facilitates permeation; cells pass through the blood vessel walls into the lumina, and hence the blood.
- Transport of tumor cells in the bloodstream. Cells may aggregate, increasing their chance of success.
- Impact in a capillary network, usually the first encountered.
- Destruction, or adherence to blood vessel walls, or continued travel to subsequent sites.
- Penetration through capillary walls to tissue interstitium.
- Secondary tumor growth.

### Lymphogenous Spread

- Cell shedding from the primary tumor.
- Movement of cells into the interstitial space of the host or nearby structures.
- Cells penetrate into lymph capillaries, or are picked up by them, and enter the small lymph vessels.
- Travel to regional lymph nodes.
- Destruction by immune system cells or proliferation in the node. Note that cells can enter the bloodstream via the nodal capillaries.
- Passage to right lymphatic and thoracic ducts.
- Entry to bloodstream. See Hematogenous Spread.

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potential impact of massage therapy at each stage.

## Stage 1: Cell Shedding From The Primary Tumor

Tumor cells for the various cancer types have their own characteristic rates and time frames for metastatic development. It is possible that only a certain percentage of cells are capable of the splitting off mechanism, and that this percentage varies in different cancers. These factors are beyond the control of the massage therapist.

The question remains, however: Could direct pressure or another strong stimulus, such as intense hydrotherapy, enhance the potential for cell shedding from a malignant tumor? One instructive reference was found in the physiotherapy context. "This process [of cancerous cells entering the bloodstream] is influenced by several factors, such as biomechanical processes or gross mechanical manipulation, which can drive a large number of cells into circulation."<sup>6</sup> The implication is that sufficient direct pressure will traumatize the tumor and promote release of cells. It may also be inferred by "biomechanical processes" that an intense movement modality (for example, passive forced stretching) or a highly stimulating local hydrotherapy application might be unsafe.

In response to a question from a physician, this medical opinion was offered in the *Journal of the American Medical Association* in 1977: "I firmly believe that heat and massage should not be used if there is any possibility that a primary or metastatic neoplasm exists in the skin or subcutaneous tissue at the site of application."<sup>7</sup> This is an old source, but it reflects a current concern. The implication is that the closer the cancer is to the skin surface, the greater the risk from massage therapy.

It would be more satisfying to be able to consider a larger volume of research and opinion. However, the possibility clearly exists that some components of massage treatment, if applied locally and with sufficient intensity, especially to a superficial tumor, could provoke cell shedding.

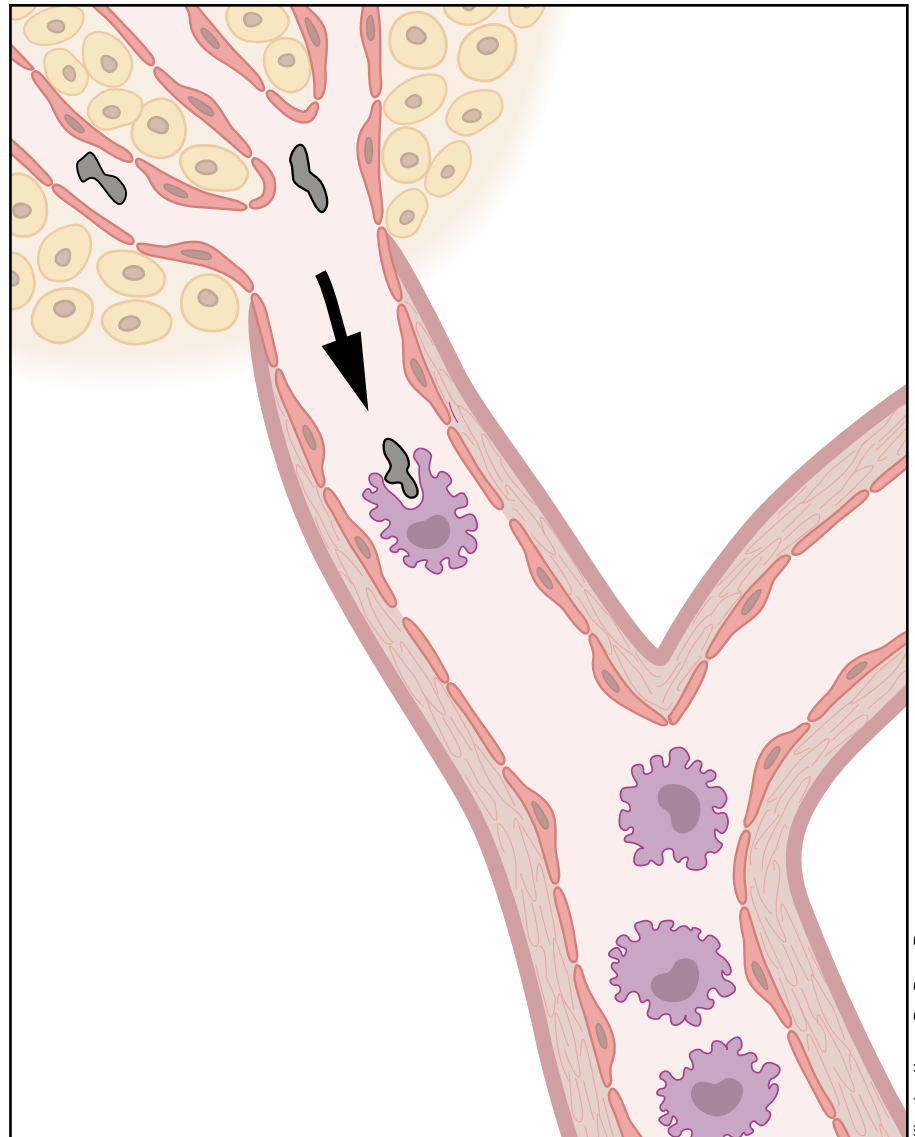
## Stage 2: Circulation In The Blood Or Lymph Channels

As previously discussed, it has been accepted that the rate of survival of metastatic cells in the bloodstream is somewhere under one percent. This extremely high mortality rate is hypothesized to be the result of several hostile factors. These include attack by the host's immune system, incapacity of the sessile (not designed for movement) cancer cells to absorb nutrients while in circulation, and trauma from continuous movement.

The relevant question for massage therapy could be stated as: Could an increase in blood or lymph flow aid the survival of circulating cancerous

cells? No specific reference was found in answer to this question, but several pieces of related research and opinion would suggest not. The massive destruction of cancer cells in the blood and lymph indicates that these environments are always highly antagonistic. Given these hostile factors, increased speed or volume of flow would be as likely to jeopardize cell survival as support it.

If an increased risk does exist, massage would not be isolated in creating this type of effect. Were it to be true that stimulation of the circulation encourages metastasis, hot showers, exercise, sexual activity and many other aspects of daily life would confer equiv-

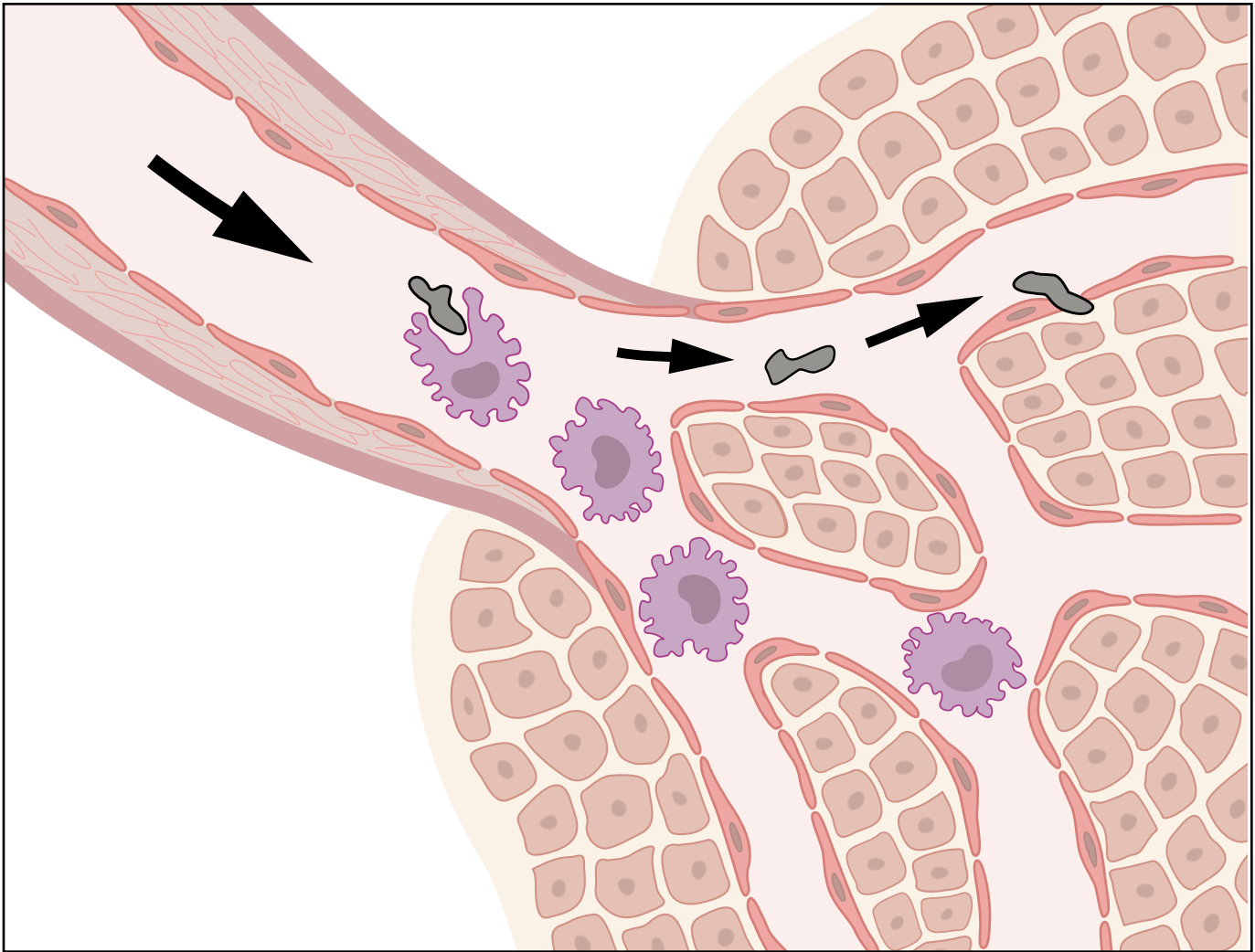


Illustrations By Bev Ransom

### Stage 2: Circulation In The Blood And Lymph Channels

Cancer cells are migrating via blood vessels where they may be destroyed by the immune system (Macrophages).

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### Stage 3: Implantation At A Secondary Site

*Some cancer cells escape destruction by the immune system and travel, to become implanted at a new location.*

alent risks. Individuals with cancer are almost always encouraged to exercise and remain as active they can; such advice from the medical community would seem to place other values ahead of a risk of promoting metastasis from a general circulation increase. About the role of exercise specifically, Dr. Carl Simonton makes the following statement: “The overall picture is that people engaged in regular exercise programs tend to develop a healthier psychological profile in general—one often identified with a favorable prognosis for the course of the malignancy.”<sup>8</sup>

Similar claims can likely be made about regular massage therapy. One study<sup>9</sup> makes reference to the following effects of repeated massage treatments for cancer clients: promotion of the relaxation response, decreased

muscle tension, nausea, anxiety, and psychological distress, and reduction in feelings of isolation.

It also has been argued that promoting better circulatory efficiency, especially in lymph flow, may aid the host immune response, and therefore encourage better eradication of cancerous cells. These arguments are presently based on personal opinion and clinical observation. Current research on manual lymph drainage techniques may offer some answers.

### Stage 3: Implantation At A Secondary Site

Here we are addressing the potential for implantation of surviving metastatic cells once they reach the capillary network of a possible secondary site. Although there is also

high cancer-cell morbidity at this stage because of host immune cell activity, could the likelihood of their enduring and proliferating in the tissue somehow be increased by massage therapy? The possibility that such a risk exists has not been proven or disproven by research. The concern hinges on the fear that massage therapy techniques could mechanically cause more cells to lodge in capillary beds and hence increase the possibility of successful implantation.

Pushing blood in greater volume or at higher pressure toward capillary beds can result in greater arrest of tumor cells. However, it has been repeatedly shown that despite the fact that cancer cells will impact in the first small vessels encountered (as with other emboli), they do not necessarily devel-

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op at those sites.<sup>10,11</sup> While there is the possibility of randomized distribution of metastases in a small percentage of cancers, the pattern of metastasis is usually seen to be characteristic for each cancer and is based more on tissue affinities. Some of the reasons for this are believed to be:<sup>12</sup>

- The “homing” ability of some cancers—they prefer certain tissue environments;
- Some cancers do not have the enzymes needed to destroy some tissue matrices and/or basement membranes;
- Some cancers have an affinity for endothelium;
- Some organs do not have the right growth factors for some cancers.

In other words, the end result does not reflect secondary tumor growth in nearest capillary beds, but rather a preference to become established in specific tissues for other reasons. Patterns of metastasis formation are well documented for most cancers, and therefore are easily researched by the massage therapist. A cautious approach to circulatory stimulation at predicted metastasis sites might be appropriate, especially if they are located superficially—an example would be the axillary lymph nodes in breast cancer. This type of precaution has limited value, however, since most metastatic patterns involve the vital organs, and it is virtually impossible to limit the higher rate of blood flow these experience from an increase in the general circulation.

## Summary Of Metastasis Risk

In summary, it can be seen that the highest risk correlation probably occurs with firm direct contact or other strong stimuli applied on or near a tumor, with greatest concern arising if the tumor is close to the skin surface. This risk is greatly offset by the likelihood that should cells be released by such means, their odds of survival are still extremely slim.

Try to obtain as much information as possible about the location of known tumors, and avoid deep pressure and other intense local modalities. In the

most conservative view, accessible predicted metastasis sites also could be approached with caution.

Fears about the risks from increased circulation of blood and lymph are probably unfounded. In fact, the effects of massage therapy may well mitigate against the survival of cancer cells moving in these media.

Because absolute statements cannot be made based on the information currently available, the massage therapist, the physician, and the client need to contemplate the risks in each case. The cancer type and progression, the client's degree of immune system function, medical treatments in progress, remission period or cancer-free time frame, possible massage

## As benefits are weighed against the risks, the right to informed consent to treatment rests with the patient.

treatment related risks, and the client's attitude and beliefs about the purpose of massage therapy in the treatment program should all be taken into consideration. As benefits are weighed against possible risks, the right to informed consent to treatment rests with the person with cancer. ❏

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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, RMT, 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. Curties is also executive director and one of the owners of Sutherland-Chan. In addition, she has been actively involved in the massage therapy profession as a volunteer. Among her numerous roles and projects, she served as American Massage Therapy Association (AMTA) Council of Schools president from 1995-1997. Curties 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 is also the author of *Breast Massage*.

## References

1. Wolberg, W., S. Kahn et al, eds. *Concepts In Cancer Medicine*. New York: Grune & Stratton, 1983, (p.149).
2. Kaiser, H. “Comparative Importance Of The Lymphatic System During Neoplastic Progression: Lymphohematogenous Spreading.” *Fundamental Aspects Of Cancer (Cancer Growth And Progression Series, Volume 1)*. Netherlands: Kluwer Academic Publishers, 1989.
3. Netland, P. and B. Zetter. “Tumor Cell Interactions With Blood Vessels During Cancer Metastasis.” *Fundamental Aspects Of Cancer (Cancer Growth And Progression Series, Volume 1)*, Netherlands: Kluwer Academic Publishers, 1989.
4. Netland, P. and B. Zetter.
5. Netland, P. and B. Zetter.
6. Plesnicar, S. “Mechanisms of Development of Metastases.” *Critical Review in Oncogenesis*, 1(2): 176, 1989.
7. Abramson, D. I. “Questions And Answers.” *Journal of the American Medical Association*, 237(8): 812, 1977.
8. Simonton, O. C., S. Matthews-Simonton, and J. Creighton. *Getting Well Again*. New York: Bantam Books, 1980, (p.222).
9. Tope, D. M., D. M. Hahn, and B. Pinkson. *Massage Therapy: An Old Intervention Comes Of Age*, Internet Source: Oncolink, 1994.
10. Netland P. and B. Zetter.
11. Varani J., J. P. McCoy, and P. A. Ward. “The Attraction Of Wandering Metastatic Cells.” *Fundamental Aspects Of Cancer (Cancer Growth And Progression Series, Volume 1)*. Netherlands: Kluwer Academic Publishers, 1989, (p.73-83).
12. *The Biology Of Cancer*, notes from Spring, 1995 Biology of Cancer class at Berkeley, Internet Source: Oncolink.