

Workgroup III

Diagnosis and Management of Lymphedema

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The purpose of this workshop was to derive a consensus statement regarding the diagnosis and treatment of lymphedema following breast carcinoma therapy. The need for such a position statement arises, on the one hand, from a tendency toward therapeutic neglect of this rather prevalent disorder¹ and, on the other, from the recognition that there are currently several broadly practiced schools of lymphedema therapy. In practice, the treatment methods that are promulgated are not always consonant with one another. Thus, it is important to emphasize greater physician awareness of this condition and its prompt recognition, as well as to promote universally applicable approaches to disease management. Several important concepts arose from the workshop discussions: the importance of the patient's subjective presentation with early changes in the trunk or upper extremity, which may presage the clinician's ability to document lymphatic dysfunction objectively; the importance of early management of patients during the first months after breast carcinoma therapy; and the importance of a multidisciplinary approach to the therapy of lymphedema, with differentiation among those modalities that achieve volume reduction of the involved limb from those that maintain long term beneficial therapeutic effects.

RECOMMENDATIONS

Diagnosis

In most cases, the diagnosis of lymphedema following breast carcinoma therapy will be established on the basis of clinical criteria. In this regard, it is important to underscore the value of the patient's subjective awareness of the symptoms or physical changes that accompany the appearance of lymphedema. These subjective complaints may herald the presence of pathology and may, at times, precede the ability of the clinician to detect objective changes of lymphedema on the physical examination. Early detection of pathology can promote the prompt institution of educational and other interventions. Special considerations should apply to symptoms reported by patients during the first 12 weeks following cancer therapy *vide infra* (v.i.).

In addition to subjectively perceived swelling of the involved extremity, patients may report such sensations as "fullness," "tightness," or "heaviness" of the limb, shoulder girdle, or thoracic regions. All such symptomatic concerns are potentially worthy of attention in these patients and should not be ignored; specifically, any new presentation of pain and immobility of the limb or the shoulder girdle should be promptly evaluated.

In addition to noting the patient's spontaneous complaints,

symptoms of early lymphedema should be actively questioned by the clinician at each evaluation of the patient following breast carcinoma therapy. The patient should not perceive the clinician to be indifferent to the psychosocial, cosmetic, or functional impact of this complication of breast carcinoma treatment. Proper attention to the patient's complaints will serve to validate the patients' concerns and will foster future communication of symptoms by the patient to the clinician. Subjective concerns of the patients should be further validated by recording this data in the clinical record, thereby promoting serial assessment of the problem at follow-up visits.

In many cases of early or subtle lymphedema, a presentation with symptoms will prompt the clinician to note and record objective physical findings of lymphedema, thereby establishing the diagnosis. However, in some cases, there might be a discordance between the patient's subjective concerns and the paucity of findings by physical examination. This discordance does not exclude either the diagnosis or the potential for progression of lymphedema. Indeed, the patient's symptoms alone might warrant the institution of early interventions, such as thorough patient education and more frequent clinical follow-up. Such patient presentations also warrant further scientific evaluation, in order to determine the long term prognostic importance of such patterns of early disease with the natural history of the lymphedema that can follow breast carcinoma treatment.

Objectively, the diagnosis of lymphedema will rely most heavily on assessment of the patient by physical examination. In some cases, where the diagnosis remains in question, a laboratory assessment may be warranted, although at this time a thorough physical examination is felt to be the gold standard for the diagnosis of lymphedema. Radioisotope indirect lymphoscintigraphy is considered a valuable supplemental approach to the detection and quantitation of lymphatic dysfunction,² but it has its primary application in research. Where doubt exists regarding a clinical diagnosis, lymphoscintigraphy can be helpful as an adjunctive diagnostic tool.

The physical findings of post-breast carcinoma lymphedema can be either subtle or quite pronounced. A partial list of such findings might include any detectable swelling or enlargement of the limb or trunk, with or without pitting; an increase in the thickness of skin folds, either in the axilla or along the length of the involved extremity, including the digits; a change in the texture or consistency of the skin; or an asymmetric increase in the adiposity of the subcutaneous tissues. Special considerations might apply to

the physical findings in patients during the first 12 weeks following cancer therapy (v.i.).

A first presentation of upper body edema in the patient following treatment of breast carcinoma might prompt the clinician to consider and exclude other important comorbidities, such as deep vein thrombosis or recurrent, metastatic malignancy with appropriate objective studies. The possible coexistence of lymphedema and venous disease in these patients also warrants strong consideration. Where necessary, objective documentation of a venous component to lymphedema can be sought with such diagnosis tools as venous Doppler ultrasonography³ and other forms of direct venous imaging.

Future research efforts in the realm of lymphedema diagnosis should be centered around the development of sensitive and specific screening modalities that would be sufficiently reliable and cost-efficient to be made widely available. Further refinement and standardization of lymphoscintigraphic techniques would enhance attempts to measure the degree of lymphatic dysfunction and thereby advance clinical and research efforts in lymphedema.

The First 12 Weeks

Although lymphedema may have its inception during the days and weeks following breast carcinoma therapy, in general, the signs and symptoms during this early posttreatment interval will more likely represent the acute effects of the surgery: most changes will be transient and will resolve with time. However, subjective complaints and objective findings that intensify, rather than diminish, during the healing phase warrant greater concern.

For most such patients, an appropriate intervention during this phase might be limited to objective assessment through physical examination, institution of preventive measures, and education of the patient in the proper care of the extremity to prevent the development or exacerbation of lymphedema. Some patients will require aggressive physical measures during this early phase; most will not. All such patients should be clinically reassessed at an early interval following the completion of healing from cancer therapy.

Future research efforts should be centered around an investigation into the correlation between early post-therapeutic swelling and the ultimate development of lymphedema. In addition, the recommendations for postsurgical activity and the use of the extremity should be reevaluated. While clinical experience dictates that early immobility after surgery might reduce the incidence of postoperative seroma formation, such measures might not be feasible in the current patient-care

environment, in which outpatient surgery and prompt hospital discharge are increasingly recommended. In general, early activity following breast carcinoma surgery should optimally be centered around scapulothoracic, elbow, and hand mobility with an active range of motion exercise in the absence of muscular exertion against resistance.

Therapy

During the first 3 months after cancer therapy, a new diagnosis of clear-cut lymphedema may warrant therapeutic intervention. However, in most cases, complex therapy may not be required. It is recommended that all such cases of new, early lymphedema diagnosis engender a routine referral for physical and occupational therapy (PT/TO) evaluation and, if warranted, institution of appropriate physiotherapy.

The treatment of chronic post-breast carcinoma lymphedema is best achieved through the application of multiple modalities. With the recognition that lymphedema therapy is not solely administered by physical therapists, it is recommended that such terms as *complete decongestive physiotherapy* be replaced with the more universally applicable *decongestive lymphatic therapy*; ideally, uniformity of nomenclature will foster communication among the health care professionals who administer therapy for this disease.

Decongestive lymphatic therapy comprises a number of interrelated treatment modalities that are most efficacious when utilized in an interdependent fashion.⁴

- Proper *skin care* will optimize the supple texture of the skin and, with the other components of this therapy, minimize the risk of infection through cutaneous portals of entry;⁵
- *Manual lymphatic therapy* is a specialized form of massage that has been demonstrated to stimulate and direct lymphatic flow, thereby decreasing the edema and fibrous changes of the involved extremity;
- Application of *multilayered low-stretch bandages* (with appropriate padding) is utilized to enhance the effect of muscular activity upon the clearance of lymphatic fluid from the limb;
- *Exercise* can include, but may not be limited to, active range of motion, and should be individualized according to the patient's medical and psychosocial needs and capacity. Exercise is maximally effective when performed while the lymphedematous limb is bandaged. Isometric exercise is of dubious benefit and may, in fact, promote worsening of the edema.

After effective volume reduction has been accomplished through the combined effects of these modalities, ongoing control of edema must be accomplished through the use of *well-fitted compressive garments*. It is generally not helpful to fit these garments prior to the institution of volume-reducing techniques. The compressive garment should be fitted to apply an appropriate range of external pressure, generally between 30 and 60 mmHg. It is recommended that garments be replaced every 3 months to maintain maximal therapeutic benefit.

Other treatment modalities have been advocated for the control of lymphedema and may warrant a role in therapy when used in concert with the aforementioned techniques. These include:

- *Intermittent compression pumps*, which are most efficacious when used adjunctively in manual lymphatic therapy. The use of these sequential gradient pumps in the absence of a multidisciplinary treatment program should be avoided.
- *Drug therapy* of post-breast carcinoma lymphedema is still under evaluation. The routine use of *diuretics* does not appear to be warranted, unless the patient requires such systemic therapy for co-tendant morbid conditions.
- *Benzopyrones*, such as coumarin,⁶ are not available for routine use in the U.S. at this time. Although *bioflavonoids*⁷ are readily available, long term studies have not yet documented the efficacy of this pharmacologic approach. Prophylactic, long term use of systemic *antibiotics* is routinely warranted for these patients. Nevertheless, it is important to recognize that affected individuals are often subject to repeated bouts of cellulitis, lymphangitis, and other soft tissue infections in the involved extremity.⁸ Prompt, aggressive use of systemic antibiotic therapy is clearly warranted in such circumstances, and patients and medical personnel must always be vigilant for evidence of new infection. Although the manifestations of infection can be quite fulminant, in some cases the presentation can be surprisingly subtle, provoking little more than some mild increase in the temperature, erythema, tenderness, or volume of the involved extremity.

Ongoing research efforts should be directed toward resolving the unanswered questions regarding the therapy of lymphedema associated with breast carcinoma. Future research should promote resolution of the following issues, among others:

- Determination of the relative efficacy of each of the components of the comprehensive treatment program;
- Determination of the optimal timing for the institution of various existing treatment modalities within the natural history of the disease;
- Assessment of the role of diagnostic evaluation in predicting the applicability of various therapeutic modalities to individual cases or types of lymphedema associated with breast carcinoma;
- Investigation of the role of early detection and aggressive therapy in reducing the severity of lymphedema and its likelihood of progression;
- Investigation of the efficacy of intensive comprehensive therapy in the prevention of infectious complications of lymphedema;
- Assessment of the efficacy of benzopyrones and other pharmacologic agents in the treatment of lymphedema;
- Development and evaluation of maximally efficacious antibiotic stratagems for the treatment of infectious complications of lymphedema.

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