The Boris/Weindorf/Lasinski Article Reviewed

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Secondary lymphedema is quite prevalent in cancer patients who require lymph node dissection for staging and/or treatment of their disease. Chronic lymphedema may arise shortly after surgical intervention or months to years afterward. The tendency of chronic lymphedema is to worsen over time.

Even with mild limb swelling, the patient is at increased risk of local infection, pain provoked by stretching of soft tissues, and psychological stress due to changes in body image.[1] More severe lymphedema may interfere with activities of daily living because of increased weight and decreased range of motion of the limb, as well as skin changes. In addition to hyperkeratosis and verrucous skin changes, a rare, aggressive, secondary malignancy, lymphangiosarcoma, may arise.[2] Because of all of the above, the treatment of secondary lymphedema should not be neglected.

Two Major Nonoperative Treatment Approaches

Two major approaches to the nonoperative treatment of lymphedema are used in the United States. A combination of physical therapies (CPT) employs manual lymphedema treatment, therapeutic exercise, and wrapping or bandaging of the limb.[3] Manual lymphedema treatment is a form of massage that enhances lymphatic function in the involved limb and collateral lymphatic channels that communicate with areas of relatively normal lymphatic drainage.[4] Following a series of treatments, edema reduction is maintained by the use of gradient pressure garments and/or bandaging, therapeutic exercise, and additional massage treatments as needed.

Intermittent pneumatic compression is the other major approach; this usually entails the application of distal to proximal compression to the affected limb.[5] After such treatment, a gradient pressure garment is worn to maintain the reduction achieved.[3] Some practitioners employ methods from both general approaches. Controversy exists over the optimal method of conservative treatment.

As mentioned in the article by Boris et al, prior papers have described successful outcomes using manual lymphedema treatment as the basis for CPT in treating the lymphedematous limb. The results reported by Boris et al are noteworthy for two reasons. First, the average reductions in lymphedema reported are comparable to previous reports of favorable outcomes. More important, measurements taken 3 years after treatment indicate maintenance of at least part of the initial lymphedema reduction without additional manual treatment. Furthermore, patients reported as being 100% compliant with the maintenance program had further edema reduction.

Some questions regarding the article by Boris et al come to mind. Were all patients 100% compliant for the entire 30-day daily treatment regimen? If so, what approaches or incentives were utilized to get so many consecutive patients to be so compliant? The precise meaning of the categories of percentage compliance at the time of 3-year follow-up is not defined. Given the reported benefits of adherence to a maintenance program, methods to increase patient compliance need to be addressed.

In addition, more than 25% of patients undergoing 30 days of treatment were not included in the 3-year follow-up. Inclusion of all surviving patients may have affected the follow-up results. It is not entirely clear whether the initial reductions reported were different in primary vs secondary lymphedema patients. Nonetheless, the reported average reductions in lymphedema, both initially and after 3-year follow-up, are encouraging.

Need for Comparative Studies

The combination of physical therapies used for the treatment of secondary lymphedema is labor-intensive. It requires an appropriately trained therapist who can deliver daily treatments for a 30-day period. Furthermore, it requires patient compliance over the treatment period. This raises the issue of economic considerations. Such intensive treatment can be costly and may interfere with the patient's work schedule. Some patients definitely cannot comply with intensive CPT because of one or more of these reasons.

It is certainly conceivable that fewer than daily treatments or treatments lasting less than 30 days may have similar efficacy. Therefore, comparative studies are needed to define the optimal frequency and duration of CPT or the characteristics of a subpopulation who require less intensive treatment.

Many practitioners utilize intermittent pneumatic pumping as the first treatment for moderate or severe chronic lymphedema.[5] Various aspects of pneumatic pumping are controversial, including the optimal pressure and duration and frequency of therapy. For patients who cannot comply with intensive CPT , pneumatic pumping, perhaps in combination with some aspects of CPT, may be helpful. Again, comparative studies would be useful to define which patients, if any, would benefit from pneumatic pumping, even as part of CPT.

Conclusions

Although the reported results of Boris et al are impressive, economic and other constraints may prevent a sizable number of patients with lymphedema from undergoing such labor-intensive treatments. Currently, many health-care insurance carriers limit reimbursement for CPT treatments. Hopefully, further studies will seek to discover similar or different approach-

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es that may be more readily available to a greater number of patients with lymphedema. On the other hand, these studies may help document that daily CPT treatments, including manual lymphedema treatment, over a 30-day period, are optimal for the treatment of secondary lymphedema. Such documentation should encourage insurance carriers to cover the necessary treatments.[3] This, in turn, would encourage greater availability of CPT to the average patient.

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Lymphedema continues to plague women after breast cancer treatment. The cosmetic deformity cannot be disguised with normal clothing; physical discomfort and disability are associated with the enlargement; and recurrent episodes of cellulitis and lymphangitis may be expected. Added to the physical symptoms is the distress caused unintentionally by clinicians, who are more interested in cancer recurrence and often trivialize the nonlethal nature of lymphedema.

In five reports published within the last 10 years, the incidence of lymphedema was almost 20%.[1-5] Incidence ranged from 16% to 25.5% of study populations measured with arm circumferences or volumetric equipment. The similarity in lymphedema incidence is notable since these patients underwent different breast cancer procedures in three different countries.

Paradoxically, the incidence of lymphedema in modern times has not decreased despite less extensive breast cancer surgery. This may be due to scatter from breast irradiation, which can be absorbed at the level of the axillary lymphatic trunks; also, irradiation is known to be synergistic with surgical dissection in producing lymphedema. Precise and meticulous radiation planning, therefore, is necessary when treating patients who have undergone axillary dissection.

Since controlling lymphedema is onerous and may require daily attention, emphasis must be placed on prevention. Nevertheless, until the causative factors are defined and understood, prevention is unlikely. Despite the human cost, lymphedema has not been systematically studied perhaps for two reasons. First, since lymphedema usually is not due to cancer recurrence, and rather, is a quality of life issue, it has not generated comprehensive research in the past. In addition, there is often a lengthy time interval to the onset of lymphedema, necessitating prolonged follow-up.

Factors Associated With Lymphedema Being Studied

Because there are no published prospective studies on lymphedema, we embarked on such a study. Between January 1988 and June 1990, we enrolled 122 patients prior to axillary lymph node dissection and took preoperative measurements of arm circumferences. In a multivariate logistic-regression analysis, 19 variables were evaluated. These included clinical characteristics, surgical/pathologic considerations, and events in subsequent years pertaining to arm factors and overall health. Unfortunately, two variables that may be most important are not amenable to study: the precise surgical technique at the level of the lymphatic trunks and the congenital individual lymphatic variations. Although not statistically significant in this early multivariate analysis with a mean follow-up of only 6.4 years, the factors most predictive of lymphedema were age, obesity, seroma duration, and breast field radiation. Lymphedema formation was constant over the years of the study period.

With Department of Defense funding, we are also currently studying the incidence of and factors associated with lymphedema in the long-term survivors of a cohort of consecutively treated breast cancer patients. Our population consists of 1,216 patients who were enrolled in a study unrelated to lymphedema from 1976 to 1978 and who have undergone active follow-up for that study. We are studying the same variables as were analyzed in the prospective study.

There is no "cure" for lymphedema. The list of diverse multiple operations attempted for this disabling condition in the past decades suggests what is the fact: none is successful. Scientific examination of lymphedema treatment is urgently needed in order to make the best individual decisions for the legions of women living with this often disabling condition.

Exact Role of CLT Requires Further Study

This descriptive study by Boris and colleagues shows that comprehensive

lymphedema therapy (CLT) is impressively effective in consecutive lymphedematous patients at a center specializing in this technique. The 100% compliance of large numbers of patients is unexplained, but may be related to motivation, especially in those who are not reimbursed by insurance plans and who must pay for therapy out of their own pocket.

It is clear that CLT has a permanent position in the armamentarium of this chronic disease. The exact role of CLT is unknown, however, and must await studies designed to compare CLT to conventional and more modest therapies.

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