Water – is it good for your Lymphedema?

Mrs. G's birthday is coming up and her husband decided to surprise her with a gift – a pampering day in a spa. His wife was pleased, yet concerned. She did not know whether a spa would be safe for her lymphedema. She called her therapist for advice. "It seems as if lymphedema does not respond well to high temperatures" said Mrs. G. to her husband. Regrettably, she asked him to return the gift and he decided to buy her a swimming pool membership instead. Was he doing the right thing?

Lymphedema is defined as an abnormal accumulation of a protein-enriched fluid acompanied by chronic inflammation, due to the damage or blockage of lymphatic vessels. People with lymphedema, or at risk of developing lymphedema, should adopt strategies in order to prevent or reduce the exacerbation of lymphedema. These include avoidance of trauma or injury, intact skin preservation, avoidance of arm constriction, use and exercise of the arm. On a similar note, exposure to an extreme heat could be of major concern. But why?

Exposure to high levels of external temperature (hot bottles, electrical blankets, hot tubs and Jacuzzis) causes the capillaries in the skin to dilate; this may lead to interstitial fluid accumulation and can exacerbate existing lymphedema, or trigger the beginning of lymphedema. Therefore it is highly recommended to avoid direct heat applications on the affected area. Sauna or steam rooms do not project direct heat to the skin (heat transfer is much slower in air than in water). Nonetheless, they can cause elevation in body temperature and thereby the worsening or development of lymphedema.

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Safe temperature will be such that will not elevate body temperature and as a consequence will not cause the response of vasodilatation in the skin Is there any optimal temperature, or “safe” temperature?

Safe temperature depends on several factors: the activity that is being performed in the water (whether it is just immersion such as sitting in the tub or swimming), the duration (whether this is a quick shower or 2 hours of walking in the sea) and the medical condition of the person.

Immersion alone is likely to be safe up to 35°C. Consequently, hot baths or Jacuzzisare probably hazardous since the temperature is usually above 38°C (100.4°F).

When exercising in water, the temperature should be adjusted to lower levels: 29 to 33°C (84-91.4°F) to be safe.. Importantly, when swimming or exercising in aqua fitness the temperature of the water needs to be in the cooler range than when just walking in the water.

Several bacteria grow in aquatic environment and can cause ear, respiratory, and genitor-urinary infections. Therefore, it is important to check the sanitation condition of a pool before participating in any pool activity. This information should be provided by pool operators. Interestingly, the bacteria that causes erysipelas (cellulites) is not present in pool water, but is actually harbored on the skin. Intact skin preservation is of utmost importance.

Needless to say that a person who wants to start pool exercises should get physician clearance since there are medical conditions other than lymphedema that may put a person at risk when immersing in water.

One should ask the question beyond safety: What types of exercises in water could be of beneficial effect to lymphedema treatment?

Compression garments are generally recommended to treat lymphedema. These garments apply gradient force from higher to lower pressure. This force assists the lymph to flow in the right direction from farthest to nearest segments of a lymphedematous extremity (i.e. towards the top of the hose). Hydrostatic pressure applies its force with an analogous mechanism to compression garments. Importantly, the pressure gradient by water exceeds the pressure gradient by compression garments. Hydrostatic pressure increases directly with the depth of water. When immersing in water, the addition of each centimeter of depth will increase the hydrostatic pressure by 0.73 mmHg (1.85 mmHg/inch). For example, the pressure on feet at a depth of 100 centimeter, would be 73 mmHg (more than a pressure applied by a class 3 compression garment). Similarly, the hydrostatic pressure on a hand vertically immersed in water at a depth of 60 centimeters would be 44mmHg (more than a pressure applied by a class 2 compression garment). This pressure is pleasant and imperceptible. In addition, the pressure exerted on a body that is immersed in water is equal from all directions at every depth. This is of utmost importance as some parts of the body (i.e. chest & breast, genitals, ankle & wrist, fingers & toes) often do not experience equalized pressure by compression garment or by bandaging.

Lymphotome is a skin area that drains lymph fluid into regional lymph nodes. For example, the upper chest lymphotome drains the skin of the arm, front and back chest into the lymph nodes under the armpit. Excess lymph fluid has to pass through healthy

lymphotomes and into functional lymph nodes. Immersion in water may be insufficient for treating lymphedema. Hydrostatic pressure lacks the ability to redirect the lymph fluid to healthy lymphotomes. Therefore, there is a need for supplementary exercises such as the Aqua Lymphatic Therapy (ALT) - the Tidhar method© .

ALT is based on the Casley –Smith remedial exercises and uses the same principles, yet in an aquatic environment. The method (is based on) uses the anatomic principles of the lymphatic system and the force of the water to achieve the goals of lymphedema therapy. The water temperature ranges from 31°C to 33°C (78.8-91.4°F). This temperature enables slow movements in a safe way that will not cause increased swelling. The buoyancy force enables elevating of the limbs and thus performing exercises and self massage with minimal effort. The hydrostatic pressure of water increases lymph and venous flow, thereby protects the limb from swelling and reduces edema.

Chronic lymphedema of the limbs can cause muscle weakness. The viscosity of water provides resistance to body movements. ALT uses different ways to minimize water resistance:

- Reducing the surface of progression (for example, in lymphedema of one arm, side walking instead of frontal plane walking)
- Moving through the water in a slow and gentle manner
- Exercising certain movements with flexed instead of stretched extremities

Over time the resistance will promote strengthening as well.

The sequence of exercises in ALT is important. First, healthy lymphotomes are activated proximally by breathing exercises in order to clear the reservoir. Second, proximal movements of thorax, abdomen and shoulder girdle are performed in conjunction with self-massage . Lastly, exercises areperformed to clear the affected lymphotomes into the healthy ones by performing self-massage and movements that involve distant joints of the limbs (ankle, wrist etc)

ALT is usually performed in a group setting, in which people with similar conditions exercise together. Each session lasts 45 minutes. Once a week, measurements of limb circumferences are taken before and after each session to enable the participants to receive a good feedback on their immediate performance and on their progress between sessions. It is recommended to bandage the limb or to wear a compression garment immediately after an ALT session in order to preserve the results of the treatment.

The ALT method was studied in a randomized controlled trial published in 2009, in which 48 women with lymphedema of the arm were divided into a study and a control group. The study group participated in a weekly session of ALT and the 2 groups were supposed to keep on performing self management therapy (included self massage, use of compression garment or bandaging and remedial exercises). The women were treated for 3 months and arm volume measurements, quality of life and self management care were evaluated. The quality of life was improved over the 3 month intervention in both psychological and social dimensions in the ALT group while the control group got worse over time. There was a mean volume reduction of 54 ml after the first ALT session and a

mean reduction of 98 ml after the last session. These differences were statistically and clinically significant. However, these reductions did not maintain over the study period. This could be due to low adherence (28%) with compression sleeve wearing. ALT was found to be safe as no woman experienced infection during the intervention period. On a similar note, ALT was found to improve strength, shoulder range of motion, pain and disability in a second randomized control pilot study (unpublished data; 2007).

Mrs. S had lymphedema of the left leg due to removal of inguinal lymph node and radiation after gynecological cancer surgery. She suffered from 23% lymphedema compared to her healthy right leg. After an intensive therapy of Complex Lymphatic Therapy (CLT) her lymphedema reduced to 3% and was maintained for 6 months. Following an allergy attack and a second tumor removal from her genitals, her lymphedema got worse and reached 17% compared with her healthy leg. Swimming 3 times a week and wearing the compression garment did not stop the exacerbation. She could not afford to take time off from her work once more for intensive CLT. Fortunately, 2.5 years later, an ALT program was launched next to her home over the weekends. She attended the group sessions once weekly for 18 months. Furthermore, she wore a compression garment during the daytime between sessions and continued swimming twice weekly. In 4 months she reduced her swelling from 17% to 2% (-88%change) and maintained that for the rest of the year.

Water – is it good for your Lymphedema? Definitely Yes!!

Aquatic environment is safe as long as being used according to the principles discussed above. ALT is a method that can improve lymphedema and maintain the results of the intensive therapy. The summer comes – dive in and take the pressure off your limbs!