

# Low-energy Extracorporeal Shock Wave Therapy (ESWT) on secondary fibro-lymphedema : a feasibility study

Tom Nonneman<sup>1,2</sup>, Erika Joos<sup>1,2</sup>, Assaf Zeltzer<sup>1,3,5</sup>, Carola Brussaard<sup>4</sup>, Nele Adriaenssens<sup>1,3</sup>

Brussels Health Campus, Medicine, VUB, University of Brussels<sup>1</sup>, University Hospital Brussels, Belgium, Dep. Physical Medicine & Rehabilitation<sup>2</sup>, University Hospital Brussels, Belgium, Dep. European Lymphology Clinic<sup>3</sup>, University Hospital Brussels, Belgium, Dep. Radiology<sup>4</sup>, University Hospital Brussels, Belgium, Dep. Plastic & Reconstructive Surgery<sup>5</sup>

## [Background and aims]

Breast cancer diagnosis and treatment with sentinel lymph node biopsy, axillary lymph node dissection and (neo)adjuvant radiotherapy can cause secondary lymphedema. Studies between 2007 and 2011 reported an overall incidence of 20% 6 months post-surgery, about 2,000 diagnoses/year in Belgium. The accumulation of protein rich fluid in the interstitial tissue, chronic inflammation of the lymphatic channels and fat hypertrophy lead to a clinical lymphedema, if untreated to a fibro-lymphedema. Management of secondary lymphedema to improve QoL includes up to date regular exercise, combined physical therapy (CPT), compression bandages, derivative and reconstructive surgery (LVA, LNT, Liposuction) and the prevention of infections.

Earlier studies have demonstrated that ESWT can both reduce the volume of the limb and improve the tissue consistence of the fibrotic areas.. The low-energy shockwave enhances drainage of lymphatic fluid by an upregulation of VEGF-C expression and thus lymphangiogenesis.

## [Methods]

A feasibility study was performed on 10 patients between 18 and 81 years of age with secondary upper limb fibro-lymphedema after breast cancer treatment. All have had radiotherapy on the affected limb and a previous surgical intervention (LVA and/or LNT). No intervention was made regarding their current lymphedema treatment (CPT, compression bandages). 2,600 shocks (1,800 on the most fibrotic spot located by NMR, 800 in a grid pattern) at 0.1mJ/mm<sup>2</sup> will be applicated 8 times over 4 weeks using the MTS OW100 electro hydraulic shock wave device with an OP155 unfocused applicator. Perometry and circumference pre- and post-treatment and weekly VAS score analysis (Hardness of the skin, Oedema and Sensory impairment) define the outcome.

## [Results]

No definitive results available today. The ongoing study will be analysed in the month of April. Preliminary results look promising on both edema and hardness of the skin.

## [Conclusions]