Deep infrared thermography and secondary breast cancer lymphoedema

*Belgrado JP;** Bourgeois P; *Alignier J. *Bracale P; *Guiochon M ; **Hardis M; *JJ.Moraine

*Université Libre de Bruxelles

Lymphology Research Unit

** Institut Jule Bordet – Bruxelles

Corresponding author:

JP Belgrado, PT Dhrs - Université Libre de Bruxelles - Faculté des Sciences de la Motricité – Lymphology Research Unit - CP 640 Campus Erasme - 808, route de Lennik - 1070 Bruxelles – Belgium

e-mail belgrado@ulb.ac.be

Background: Lymphoscintigraphy enables to highlight the dermal area that encounters the heaviest pressure due to the lymphatic stasis and its implications : the dermal backflow of the lymph. Because of its high cost and the exposure to ionization, lymphoscintigraphy cannot be repeated regularly. But the decrease of lymphatic stasis in the derm is a good indicator to signal the efficiency of the decongestive treatment. Thus, it is valuable to hold a measurement device – even though it is indirect – to verify the state of the derm.

Objectives :

To control the ability of deep IR imaging of lymphoedema to indicate the skin's area that is involved by dermal back flow compared to lymphoscintigraphy which constitutes the gold standard.

To verify the possible correlation between the reduction of the oedema and the improvement of the skin's vascularisation.

Method :

Deep infrared imaging applied on 12 volountary patients presenting an unilateral secondary lymphoedema of the upper limb stage II. The patients were seen in line with an appointment for a lymphoscintigraphy prescribed by their medical practitioner.

Infrared imaging was realized in a seperated room before lymphoscintigraphy, respecting standard conditions. The comparison of infrared and lymphoscintigraohic images was realized by independant persons, in order to establish the relation between skin's temperature and lymphoscintigraphy with the help of a specific software.

Each patient got 6 CDT (complex decongestive treatment) – sessions.

IR imaging was repeated in standard conditions before each treatment and at the end of the 6 treatments.

Results :

The area of dermal backflow, detected on the limb by lymphoscintigraphy, is in accordance with the thermogramm. It shows a significative reduction of the skin's temperature (1.3℃ +/-0.07℃).

After 6 sessions of CDT, the skin's temperature of these areas has been normalized compared to the controlateral side.

Conclusions:

Deep infrared imaging completes the arsenal of non invasive imaging tools helping the follow up of lymphoedema. It might also help to identify dermal back flow areas in order to monitor the decongestive treatment proposed to the patient.

Declaration of interest: The authors declare that there's no conflict of interest including affiliations with sponsoring companies within the body of the abstract.