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SUMMARY

Clinical Sciences

XXXIV E.S.L. Congress - Naples (Italy), 25-27 June 2008

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Calendar

XXIII WORLD CONGRESS OF THE INTERNATIONAL UNION OF ANGIOLOGY - 21-25 JUNE 2008, ATHENS (GREECE) 9TH ANNUAL MEETING OF THE EUROPEAN VENOUS FORUM - 26-28 JUNE 2008, BARCELONA (SPA) 37. JAHRESTAGUNG DER DEUTSCHEN GESELLSCHAFT FÜR ANGIOLOGIE - 23-24 SEPTEMBER 2008, MANNHEIM (GER) LA TERAPIA DELL'ULCERA CUTANEA: UN PONTE FRA TRADIZIONE E INNOVAZIONE - 24-27 SEPTEMBER 2008, ROMA (ITA) I° INTERNATIONAL CONGRESS OF PHLEBOLOGY AND LYMPHOLOGY - 25-27 SEPTEMBER 2008, MAR DEL PLATA (ARG) SOCIETÀ ITALIANA DI FLEBOLOGIA, XII CONGRESSO NAZIONALE - 2-5 OCTOBER 2008, BRINDISI (ITA) ACP MEETING - 22TH ANNUAL CONGRESS - 6-9 NOVEMBER 2008, MARCO ISLAND (USA)

UIP 50 - International Union of Phlebology, XVI[™] World Meeting - August 31-September 4, 2009 Grimaldi Forum, Principato di Monaco

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XXXIV E.S.L. Congress

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Naples (Italy)

June 2008

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European Society of Lymphology



groupement européen de lymphologie

XXXIV CONGRESS

Naples (Italy) - June 25-27, 2008

Congress Venue: Centro Congressi dell'Università "Federico II" Via Partenope - Naples

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Programme

	Thursday 26 June					
8,15	Physical approch in Lymphedema treatment					
President Chairmen Lecture	 Földi E. (Germany) Leduc A. (Belgium) – Michelini S. (Italy) – Benda K. (Czech Rep.) Physical treatment of edema: proposal for an European Consensus Leduc A., Leduc O. (Belgium), Michelini S. (Italy), Guyaz C., Bucher J. (Switzerland) 					
H. 08.40	Patients self-treatment – Why and how? Benda K., Bendova M. (<i>Czech Rep.</i>)					
H. 08.50	Physical Therapies in the Treatment of Lymphedema: Preliminary Results of a Phase III, Multicenter, Randomized, Double-Blind, Controlled Study Forner-Cordero I., Muñoz-Langa J., DeMiguel-Jimeno J.M., Rel-Monzó P. (<i>Spain</i>)					
H. 09.00	Adequate post-surgery physiotherapy for women with breast cancer in evidence based medicine. Review Galli T., Sudati R. (<i>Italy</i>)					
H. 09.10	Muscolar and articular involvement in primary and secondary lymphedema Michelini S., Failla A., Moneta G., Cardone M., Zinicola V., Santambrogio F. (<i>Italy</i>)					
H. 09.20	Intermittent Pneumatic Compression in the treatment of Lymphedema: Peer review Belgrado J.P., Bourgeois P., Röh N., Moraine J.J. (<i>Belgium</i>)					
H. 09.30	Pressure's variation during 24h at the interface skin-multilayered bandages in lymphedema Belgrado J.P., Cerf M., Demaret P., Cullus P., Natoli G., Röh N., Moraine J.J. (<i>Belgium</i>)					
H. 09.40	Substance p and calcitonin-gene related peptide in lymphedema and their changes after physiothertapy Yudate T., Minami S., Iwasaka K., Ohkuma M. (<i>Japan</i>)					
H. 09.50	Treatment of lymphedema with shockwave therapy: preliminary study Michelini S., Failla A., Moneta G., Zinicola V., Macaluso B., Cardone M., Antonucci D. (<i>Italy</i>)					
H. 10.00	Treatement of plexitis after radiotherapy Becker C. (France)					
H. 10.10	Discussion					
H. 10.30	Coffee break					

Thursday 26 June

10,45 Diagnosis and prevention of lymphatic diseases

President	Brorson H. (Sweden)
Chairmen	Del Guercio R. (Italy) – Mancini S. (Italy) – Bernas M. (USA)
Lecture	From lymph to fat: Liposuction of lymphedema Brorson H. (Sweden)

H. 11.10 Chylous Reflux Syndromes: A Lymphangioscintigraphic Perspective Williams W., O'Chart M., Bernas M., Witte C., Witte M. (USA)

H. 11.20	DXA analysis shows excess fat tissue in chronic arm lymphedema Brorson H., Ohlin K., Olsson G., Karlsson M.K. (<i>Sweden</i>)						
H. 11.30	Imaging of lymphatic system Ningfei Liu (Chinese Republic)						
H. 11.40	Imaging and therapeutical strategy Appetecchi F., Curti L., De Rebotti C., Cestari M. (Italy)						
H. 11.50	Clinical findings of lymphedema and lymphoscintigraphic patterns: our experience Michelini S., Failla A., Moneta G., Cardone M., Fiorentino A., Rubeghi V., Pugliesi D. (<i>Italy</i>)						
H. 12.00	Case of immunodeficiency due to chylous dysplasia: diagnostic assessment and therapeutic approach Campisi C., Boccardo F. (<i>Italy</i>)						
H. 12.10	Lymphedema post-mastectomy: Primary prevention Cestari M., Appetecchi F., Curti L., De Rebotti C. (Italy)						
H. 12.20	Synoptic revision of preventive concepts in the treatment of lymphedema Pissas A., Rubay R., Rupp D., Berraru A., Dubois J.B. (<i>France</i>)						
H. 12.30	Radioprotection and radioprotective agens Stea Dino (USA)						
H. 12.40	Discussion						
H. 13.00	Lunch – (Executive Comittee ISL lunch)						
	Thursday 26 June						
14,00	Surgical treatment of lymphedema						
President Chairmen Lecture	Campisi C. (<i>Italy</i>) Glovinczki P. (<i>USA</i>) – Papendieck C. (<i>Argentina</i>) – Baumeister R.G.H. (<i>Germany</i>) Rehabilitative lymphatic microsurgery: possible full lymphatic drainage functional recovery Campisi C., Boccardo F. (<i>Italy</i>)						
H. 14.25	Liposuction normalizes elephantiasis of the leg – A prospective study with a 4 year follow-up Brorson H., Ohlin K., Olsson G., Svensson B. (<i>Sweden</i>)						
H. 14.35	Liposuction of postmastectomy arm lymphedema completely removes excess volume: A thirteen year study Brorson H., Ohlin K., Olsson G., Svensson B. (Sweden)						
H. 14.45	Prevention, reconstructive microsurgery and treatment of secondary tissue changes in lymphedemas Baumeister R.G.H., Wallmichrath J., Weiss M., Frick A. (<i>Germany</i>)						

Emmanuil Kondoleon: the man behind the surgical treatment of lymphedema

Hamadé A., Ielmini A., Gaertner S., Michel P., Obringer G., Stoessel J.Ch., Metzger H.,

Dimakakos E., Arkadopoulos N., Katsenis K., Toumpis S., Syrigos K. (Greece)

Treatment of lymphoceles occurring after vascular surgery

Wald M., Jarolím L., Adámek J., Hyklová L., Váchová H. (Czech Rep.)

Surgical treatment of scrotum lymphedema

H. 14.55

H. 15.05

H. 15.15

Lehn-Hogg M. (France)

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H. 15.25	Plurydisciplinary staff for surgery in Lymphedema. Aim, arrangement and first results

Brun J.P., Becker C. (France)

H. 15.35 Discussion

H. 16.00 Coffee break

Thursday 26 June

16,00 Clinical and epidemiological aspects in lymphatic diseases

President Chairmen Lecture	Bourgeois P. (<i>Belgium</i>) Boccardo F. (<i>Italy</i>) – Forner Cordero J. (<i>Spain</i>) – Belgrado J.P. (<i>Belgium</i>) <i>Primary Lymphedema, why?</i> Papendieck C. (<i>Argentina</i>)						
H. 16.25	The incidence of MLD on cardiac parameters Leduc O., Crasset C., Koziel A., Baptiste N., Delahaie C. (<i>Belgium</i>)						
H. 16.35	Immunostimulation and decrease of phlogistic complications in lymphedema patients: preliminary study Michelini S., Failla A., Moneta G., Cardone M., Rubeghi V., Zinicola V. (Italy)						
H. 16.45	Secondary lymphedema and functional concatenation of failures in locomotor system in case of upper limb Loskotova A., Loskotova J. (<i>Czech Rep.</i>)						
H. 16.55	A Lymphangiological Emergency and Role of Modern Emergency Units Macciò A., Boccardo F., Campisi C. (<i>Italy</i>)						
H. 17.05	Two years rehabilitation D.H. activity on lymphedema patients: epidemiological data Michelini S., Failla A., Moneta G., Cardone M., Michelotti L., Vinicola V., Romaldini F. (<i>Italy</i>)						
H. 17.15	Italian Ministry of the Health: National Guidelines on Lymphedema Michelini S., Campisi C., Gasbarro V., Allegra C., Conte M., Cestari M., Molisso A., Cavezzi A., Mattassi R., Aiello A., Ricci M., Zanetti L. (<i>Italy</i>)						
LI 17 25	Discussion						

H. 17.25 Discussion

Friday 27 June

08,15 Anatomy and pathophysiology of lymphatics disorders

President	Pissas A. (France)
Chairmen	Eliska O. (Czech Rep.) – Witte M. (USA) – Thibaut G. (France)
Lecture	Hydraulic conductivity of human subcutaneous tissue in lymphedema - Formation of new tissue fluid channels Olszewski W. (<i>Poland</i>)
H. 08.40	Development of lymphatic vessels in hypertrophic hearts Okada E. (<i>Japan</i>)
H. 08.50	Adipose tissue dominates chronic arm lymphedema following breast cancer: An analysis using volume rendered CT images Brorson H., Ohlin K., Olsson G., Mats L.T. (<i>Sweden</i>)
H. 09.00	Axillary web syndrome: morphological approach Leduc A., Leduc O., Sichere M., Tinlot A., Darc S., Snoeck T., Jacquemin D., Clement A., Wilputte F. (<i>Belgium</i>)

H. 09.10	Right physiopathological knowledges of lymphedema lead to the appropriate management Thibaut G. (<i>France</i>)
H. 09.20	Thermal variations during 24h at the interface skin-multilayered bandaging in lymphedema Belgrado J.P., Baudier C., Natoli G., Röh N., Moraine J.J. (<i>Belgium</i>)
H. 09.30	Pre-Clinical Rat Model of Lymphedema: From Massage to Amifostine Bernas M.J., Daley S.K., McKenna M., Hunter R.J., Hirleman E.D., Moses S.A., Stea B.D., Witte M.H. (USA)
H. 09.40	Survey of physiology features of manual lymphodrainage - Experimental work Eliska O., Eliskova M. (<i>Czech Rep.</i>)
H. 09.50	Morphologic lymphedema is a tissular connective hyperplasia Rada F.C., Dema A., Tomulea L., Rada I.O. (<i>Romania</i>)
H. 10.00	The short time effect of radiation therapy on the newly formed lymphyessels F. Pastouret, O. Leduc, P. Bourgeois, P. Lievens, A. Leduc (<i>Belgium</i>)
H. 10.10	Light and electron microscopy study of D2-40 expression on lymphatics Caldara G.F., Arcari M.L., Micheloni C. (<i>Italy</i>)
H. 10.20	Discussion
H. 10.40	Coffee break

Friday 27 June 11,00 Lymphedema management

-						
President Chairmen	Bracale G. (Italy) Okada E. (Japan) – Leduc O. (Belgium) – Brun J.P. (France)					
H. 11.00	Translational Medicine, Pharmaco/SurgicoGeomics, and the International Society of Lymphology Witte M.H. (USA)					
H. 11.10	Lymphology Outpatient Clinic: between Experiment and Community Reality Macciò A., Boccardo F., Ghiazza G.C., La Ganga V., Boraso F., Campisi C. (<i>Italy</i>)					
H. 11.20	Psicho-social patterns of lymphedema patients and long-term results of management Michelini S., Failla A., Moneta G., Cardone M., Galluccio A., Michelotti L. (<i>Italy</i>)					
H. 11.30	Stakeholder in lymphedema patient: therapeutic strategy? Molisso A. (Italy)					
H. 11.40	Approach to the lymphedema in Italy Varese P., Macciò A., De Lorenzo F., Bufalino R., Balzarini A., Michelin A. (Italy)					
H. 11.50	Disability scale for lymphedema Ricci M. (Italy)					
H. 12.00	Discussion					
H. 12.15	General Assembly of E.S.L.					
H. 13.00	Closure of Congress					



ABSTRACTS OF THE SCIENTIFIC SESSION

Physical approach in Lymphedema Treatment

1

PATIENTS' SELF-TREATMENT – WHY AND HOW?

K. BENDA, M. BENDOVÁ

ARCUS Onco - Lymphocentre Brno, Institute of Psychology and Department of Radiology, University Hospital and Medical Faculty, Masaryk University Brno, Czech Republic

Patients' self-treatment is an unavoidable part of complete decongestive therapy (CDT) in chronic lymphedema management. It includes: (a) arrangements in life régime, (b) skin care, (c) self-lymphdrainage, (d) self-bandaging, (e) self-applied pneumatic compression, (f) physical and breathing exercises, (g) elevation of the limb and (h) appropriate sport and recreational activities. Material and methods: since August 2005 altogether 348 lymphedema pts. from varying causes have been accepted for CDT on outpatient basis and folloved-up. Their treatment in our clinic began with clear-enough information about the pathology of lymphedema (lymphologist, ilustrated leaflet) and education in the art of self-care (personal teaching and demonstrations by lymphotherapists). Folloving experiences were gained:

WHY is self-treatment a substantial and important part of lymphedema management? It is easy to be performed at home and thus solves the difficulities in accessibility of specialized, systematic and frequent enough care in lymphocentres (very often distanted), saves pt's time as well as travel costs and strengthen his/her awareness of self-responsibility for participating in CDT outcome.

HOW to concept and project pt's self-care? Individual strategy based on pt's age (children, seniors), physical and psychological condition limitations, manual ability, possibility of somebodys' else help (e.g. partners, family members) etc. The art of self-treatment must be controled and clinically evaluated regularly by lymphologist, pt's psychic condition, compliance and motivation monitored by clinical psychologist, if neccessary. Our approach to current assessment criteria of self-treatment outcome is based on a questionnaire using point-system which is going to be presented.

2

PHYSICAL THERAPIES IN THE TREATMENT OF LYMPHEDEMA: PRELIMINARY RESULTS OF A PHASE III, MULTICENTER, RANDOMIZED, DOUBLE-BLIND, CONTROLLED STUDY

ISABEL FORNER-CORDERO¹, JOSÉ MUÑOZ-LANGA², JUAN M DEMIGUEL-JIMENO³, PILAR REL-MONZÓ¹

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Objectives: to assess and compare the efficacy of Manual Lymphatic Drainage (MLD), pneumatic massage (PM) and Intermittent Pneumatic Compression therapy (IPC) followed by multilayered bandages (MB) in the treatment of lymphedema.

Material and Methods: we conducted a multicenter, randomized, comparative single-blind study in patients with primary or secondary lymphedema, stage II-IV, affecting unilateral upper or lower limb, when Excess volume (EV)>10%. We excluded patients treated with Complex Decongestive Therapy during last year, with malignancy, active lymphangitis or cardiac disease. Patients were stratified within upper (UL) and lower limb (LL) lymphedema and then randomized to receive 20 sessions of the following regimens: Branch A: MLD, IPC with multi-compartmental pump and MB; Branch B: PM, IPC and MB; Branch C: IPC and MB.

The end-point was the "Percentage reduction in EV (PREV)" and was assessed by a blinded evaluator. We evaluated too the "Percentage reduction in volume (PRV)" and adverse events were recorded.

A sample size of 192 patients (64 per branch) was calculated to detect a 15% relative difference in the PREV with a significance level of 5% (two-sided), a power of 90% and an assumed drop-out rate of 10%.

At the moment, 174 patients signed-up the informed consent for participation and 161 were treated: 155 females; median age 59.1 years (range 27-84), 118 patients had lymphedema in UL and 43 in LL; lymphedema was secondary in 78.3% and primary in 21.7%; 65.8% were stage III, lymphedema chronicity was 7.3 years (95%CI:5.6-9.0); mean baseline EV was 899 ml (95%CI:809-988) in UL and 2192 ml (95%CI:1556-2829) in LL. Demographic and clinical characteristics were well balanced between the 3 branches.

Results: global mean PREV was 72.2% (95%CI:64.9-79.4). No significant differences were found between groups: 76.5% (95%CI:59.0-94.1) in group A, 67.8% (95%CI:56.6-78.9) in group B and 71.9% (95%CI:63.9-79.8) in group C (p=0.631). Global mean PRV was 15.4% (95%CI:14.4-16.3) without significant differences between groups: 15.2% (95%CI:13.4-16.9) in group A, 15.0% (95%CI:13.1-16.89) in B and 15.9% (95%CI:14.4-16.3) in C (p=0.676).

LL patients showed a better PREV (103.5%; 95%CI:74.1-132.9) than UL (66.4; 95%CI:60.0-72.9) (p<0.0001).

A greater Baseline EV (p=0.001), a greater Weight (p=0.043) and the number of episodes of lymphangitis (p=0.038) were independent predictive factors of worse response to treatment in the multivariate analysis.

Adverse effects observed were: Discomfort (113 patients), Lymphangitis (9), Edema displacement (6), Fibrosclerotic ring (4), Loss of mobility (2), Edema increase (1), without differences between groups.

Conclusions: neither Manual Lymphatic Drainage nor Pneumatic Massage appears to add any benefit to the treatment of lymphedema with Intermittent Pneumatic Compression followed by multilayered bandages in terms of reduction of excess volume.

ADEQUATE POST-SURGERY PHYSIOTHERAPY FOR WOMEN WITH BREAST CANCER IN EVIDENCE BASED MEDICINE. REVIEW

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Aim of the study:

In the last 20 years great medical and surgical innovations have been done about treatment of breast cancer. Therefore the aim of the study is to identify the best therapeutic approach for women with breast cancer in evidence based medicine.

Methods:

We conducted two different researches in Medline/PubMed.

These researches let us to find 15 Randomized Clinical Trials published from 1989 to August 2007 in English/French language. All studies included women who have undergone breast cancer surgery (BCT or MRM) followed by physical therapy within three months after surgery.

Results:

Sholder Functional Valutation

- Early VS delayed rehabilitation treatment: in the long term, all patients do not show significant differences in shoulder functional motion.
- The best results happen in subjects who do no receive radiotherapy and/or do not undergo conservative surgery.
- Factors related to the recovery of shoulder's range of motion are: previous shoulder's problems, compliance to the treatment and post surgery complications.
- The pectoral stretching program during radiotherapy do not influence shoulder range of motion(shoulder functional) because the symptoms reported by patients are not a consequence of contracture.

Seroma Incidence

- In early treatment groups (1-2 days post-op) there is a bigger incidence of seroma formation and of wound infections.
- early discharge does not affect rate of post-surgery complication if it is supported by wound care instruction, relative support and by specialist care nurses.
- The quilting technique after Latissimus Dorsi breast reconstruction significantly reduce the incidence of symptomatic dorsal seroma, its volume and frequency of aspiration. Quilting do not affect back pain or compromise shoulder mobility.

Secondary Lymphedema

- Patients who undergo conservative breast surgery and radiotherapy have more incidence to develop secondary lymphedema.
- Lymphoscintigraphy allows to point out alterations of lymphatic drainage before the clinical appearance of edema and to identify the risk of development of arm secondary lymphedema.

Quality of life

- One year after surgery most women report high levels of functioning and QoL, with no relationship between type of surgery and QoL.
- An improvement of quality of life, already in the short term, can be reached with an adequate home care support and knowledge and education about post surgery period.

Discussion:

Studies about rehabilitation treatments show that there is a strong relation between seroma formation and the beginning of shoulder rehabilitation. Early treatments cause more frequently formation of seroma in comparison with the delayed ones. In the long term, however, both treatments allow patients to reach pre- surgery functional shoulder levels. In the light of these studies we can affirm the importance of the respect of wound cicatrisation before the beginning of rehabilitation treatment.

The incidence of seroma could be reduced using less traumatic surgical techniques and minimizing shoulder motions in the immediate post surgery.

Pre-surgery lymphoscintigraphy allows to find alterations of lymphatic circulation and the risk of development of lymphedema. In these case preventive physical and rehabilitation measures allows to reduce the clinical appearance of lymphedema.

MUSCOLAR AND ARTICULAR INVOLVEMENT IN PRIMARY AND SECONDARY LYMPHEDEMA

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The limb with lymphedema presents often an involvement of the great articulation and a muscolar hypotrophy. On the lower limb we observe in primary lymphedema a decrease of the articular function of the ankle and an hypotrophy of the muscles of the leg. In secondary lymphedema there is a decrease of the knee articulation and an hypotrophy of the thigh muscles. On the upper limb we observe above all a reduction of the functional activity of the shoulder and an hypotrophy of the deltoid and of the pronosupinator muscles.

The rehabilitative project, tailored also for the muscolar trophism recovery and for the articular recovery is based on the proper exercices in function of the echographic and clinical aspects.

In this preliminary study performed on 115 patients (76 females and 39 males age ranging from 21 and 76 years, 41 with primary lymphedema and 74 with secondary lymphedema), after the treatment (three weeks of combined physical treatment associated with proper physical exercices), we observed:

- average functional articular recovery of 29% respect to the basal condition:

- average muscolar trophism and strength of 26% in interested muscles.

In conclusion we underline the importance of the proper muscolar exercice (better under the multilayer bandaging) for the complete clinical recovery of lymphedema patients, suffering as from primary lymphedema and from secondary kind.

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INTERMITTENT PNEUMATIC COMPRESSION IN THE TREATMENT OF LYMPHEDEMA: PEER REVIEW

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Intermittent pneumatic compression (IPC) has been often suggested in the field of physical treatment of primary and secondary lymphedema.

Actually, the main devices are pneumatic systems controlled by software included in a microchip that controls the pump, the valves and the sequences.

There are mainly three attitudes among professionals regarding IPC: Those who refuse to use this device, those who integrate it into a multi therapeutic approach (MLD, multilayered bandaging, exercises...) and those who make of it their main therapeutic spearhead. The International Consensus document published by the International Society of Lymphology considers IPC as adjuvant therapy, usually applied to maintain oedema reduction after a complete decongestive therapy.

Furthermore, no consensus has been attained among the users concerning the appropriate protocol of IPC. The same discordance exists about the pressure's value that has to be applied on the swollen limb.

However, despite the widely accepted use of IPC, exact physiological mechanisms of action remain to be identified. There is no specific Cochrane review, however, regarding the use of IPC in the treatment of secondary or primary lymphedema. Considering this lack of information and the existence of so many different points of view, based on our clinical and laboratory experiences, we decided to undertake an overview of the current state of knowledge concerning the use of IPC in the treatment of primary and secondary lymphedema.

This original communication is a detailed overview about different aspects of the IPC in the field of the physical treatment in secondary lymphedema.

PRESSURE'S VARIATION DURING 24 H AT THE INTERFACE SKIN-MULTILAYERED BANDAGES IN LYMPHEDEMA

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Multilayered bandages (MLB) coupled with manual lymphatic drainage is one of the main axis in the intensive physical treatment of lymphedema.

The mechanic principles which underlie the therapeutic efficiency of the multilayer bandages have been the subject of some studies on a physical model, but never on a real lymphedema. Pressures and their variations in multilayered bandaging have not been clearly defined, yet, even though it is an important parameter in order to improve this technique.

It seems evident that the pressure varies at the interface skin-multilayered bandaging when the limb is covered by MLB. Nowadays no study has described its value and possible variation. This study aims at defining values of the cutaneous pressures under MLB for patients who suffer from secondary lymphedema of the upper limb.

The values of the skin's pressure under MLB were measured by 2 flat line pressure transducers connected to a data logger during 24 hours (registering 3740values/24h) on 12 patients wearing a MLB, such as follows :

The mobile data logger was fixed on the belt of the person, 2 sensors were placed on the skin on a small and a large radius of curvature under the multi-layered bandages and a reference sensor was placed (uncovered) on the healthy arm.

This report covers the results of experiences which establish the variation during 24 h of the pressure at the interface skin-multilayered bandages for patients affected by upper limb secondary lymphedema.

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SUBSTANCE P AND CALCITONIN-GENE RELATED PEPTIDE IN LYMPHEDEMA AND THEIR CHANGES AFTER PHYSIOTHERTAPY

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The authors are treating lymphedema by concomitant application of pulse magnetic fields, vibration and hyperthermia. This physiotherapy is very effective. 17 patients have become completely free from edema and remained unchanged even after release of compression therapy (21st International Congress of Lymphology, Shanghai, 2007, OP137). Examinations to explain why and how it works are under way(the same Congress, OP 041). When unilateral or bilateral lymphedema of the extremity is treated by this physiotherapy, the untreated contralateral extremity is also decreased in the volume although the decrease is not so prominent. This ffect is not local but rather more systemic. TRPV1 is a subtype 1 vanilloid receptors which release substance P(SP) and calcitonin gene related peptide (CGRP) activated by capsaicin (red pepper), thermal or mechaical stimuli. These neurotransmitting substances contract smooth muscle cells of the lymphatics resulting in increased lymph flow. This investigations have been performed to explain the above business.

Materials and methods: Each 3 cases of secondary lymphedema of the lower extremity are examined for S P(plasma) and CGRP(serum) before and after the physiotherapy by pulse magnetic fields, vibration and hyperthyermia.

Results: SP becomes higher after the physiothrapy. And CGRP is low and without change after the treatment.

Discussion: This physiothrapy is surposed to activate also othe vanillod receptors such as TRPV2, TRPV3 and TRPV4 by thermal and mechanical stimuli. The both substances may be broken down easily and the further examinations must be done taking the specimens from more cases(for statistical evaluation) and immediately after the treatment. It should be also discussed whether their content in the skin is parallel to that of circulating blood. Besides increasing lymph flow the physiotherapy stimulates lymphatic proliferation, tissue immunological reaction, normalizing tissue oxygen content and decrease of inflammatory reactions in the lymphedematous skin. All these facts explain a remarkable good effect of this physiotherapy.

Conclusion: Substance P is increased after physiotherapy by magnetic fields, vibration and hyperthermia.

TREATMENT OF PRIMARY AND SECONDARY LYMPHEDEMA WITH SHOCKWAVE THERAPY

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We have been treating 85 patients affected by primary (29) or secondary (56) lymphedema of upper and lower limbs (57 females and 28 males).

Inclusion criteria: age between 20 and 70, complaints lasting more than 1 year with associated localized or diffuse tissue fibrosis. Exclusion criteria: specific therapy over the past 7 days, pregnancy, coagulation disorders, acute phlogosis.

Patients were treated for 10 sessions, 2.500 - 3.500 impulses each (in function of the extension at the fibrotic area). The average energy flow density during treatment was equal to a working pressure of 2 bars. Treatment frequency was 4 Hz in multiple shock mode. Never was used local anaesthesia.

The radial shockwaves are pneumatically generated and emitted at the tip of the applicator and coupled into the human tissue, until to a depth of up to 35mm. The effects on the tissue are: increase of the metabolic processes, antiphlogistic and vasodilatation and neoangiogenesis with correlate increase of the fluid transport.

Patients were evaluated 2 weeks and 1 month after treatment. They show an average decrease of the 26% of the circumference of the limb and a subjective and objective reduction of tissue consistence, above all in fibrotic areas.

We observed side effects such as local irritation, petechia, hematomas, swelling and low pain 24-36 hours after treatment. Only in 1 patient the suspension of treatment was required. By the high resolution echography we observed a reduction of the skin and epifascial thickness, corresponding to the clinical observations.

In conclusion, in our preliminary study, we can affirm that this kind of shock wave therapy is very useful in primary and secondary lymphedema, above all in clinical cases with tissular localized fibrosis.



TREATEMENT OF PLEXITIS AFTER RADIOTHERAPY

BECKER C.

France

1. 65 cases of palsy (15% complete and 75% partial) are operated.

The tecnique is consisting in complet dissection of the axillar region, external neurolysis, opening of the thoracodorsal space. After ,a big fasciocutaneous flap is dissected (DIEP or SIEP) with or without skin and placed in the axillar region to improve the vascularisation of the nerve and avoid recurrence of the fibrosis. This flap is including nodes and thus, is improving the drainage of the arm. The results are consisting

- in reducing of the volume and the weight of the arm

- reducing of the pain

- slight reducing of the palsy ,mainly on the young patients

- possibility of tendons transfers when the lymphoedema is reduced.

2. treatement of lymphoedema combined with breast reconstruction

134 patients are been reconstructed with DIEP or SIEP modified : the nodes of extenal inguinal region based on the Circonflex iliac vessels. The results are showing aesthetic results on the breast and functional results on the lymphoedema. AFter the operation, the physiotherapy is important to bring the lymph to the transplanted nodes, and after 3 months, the neolymphatic vessels are growing and the physiotherapy is less and less necesary.40% of the patients are completely healed (class 1 and 2) and 98% are improved. This communicationnis showing the technical important points.

3. treatement of congenital lymphoedema

Results showed the results on 80 congenital lymphoedema in children and young adults.

The patients are treated by nodes transplantations.

The light lymphoedema can be improved to normalised (ven isotopy) and 90% are improved.

Diagnosis and prevention of lymphatic diseases

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CHYLOUS REFLUX SYNDROMES: A LYMPHANGIOSCINTIGRAPHIC PERSPECTIVE

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Among the rarer lymphatic disorders are chylous reflux syndromes, where intestinal lymph flows retrograde through incompetent lymphatic valves and accumulates in various organs, other body parts, and tissues or leaks to the outside. There are congenital forms, which may be generalized as in neonatal chyledema, from defective lymphatic growth and valve formation, or acquired from functional or anatomic obstruction (e.g., lymphatic filariasis) or traumatic disruption of the thoracic duct, cisterna chyli, or their tributaries; or indeterminate as in lymphangioleimyomatosis). Both congenital and acquired forms most typically manifest as chylous effusions in the peritoneal, pleural, or pericardial cavity; chylous vesicles on the skin or genitalia; or leakage into the urinary tract (chyluria) or even the tracheo-bronchial tree (chyloptysis). Chylous syndromes often present substantial challenges in defining the nature and location of the structural or functional abnormalities, understanding the lymphodynamic events, and treating the condition through non-operative means. Radionuclide lymphangioscintigraphy(LAS) represents a major advance in non-invasively documenting the structural and lymphodynamic aspects of chylous reflux syndromes and providing documentation of the effectiveness of therapeutic interventions designed to reduce, divert, or eliminate the chylous reflux. Our LAS experience at the Arizona Health Sciences Center, compared to earlier use of oil contrast direct lymphography, highlights these points and illustrates the value of LAS in delineating the spectrum of chylous reflux disorders.

DXA ANALYSIS SHOWS EXCESS FAT TISSUE IN CHRONIC ARM LYMPHEDEMA

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Background: Arm lymphedema is a common complication after breast cancer treatment. Various types of conservative and surgical treatments have aimed at reducing the arm swelling, but most of these have failed due to chronic edema eventually being transformed from an accumulation of lymph fluid to an increased deposition of subcutaneous fat, i.e. to a non-pitting lymphedema. Liposuction is a safe and reliable method for reducing the excess fat without recurring deposition of it. The objective of the present study was to obtain empirical evidence confirming clinical observations of the presence of excess adipose tissue in patients with chronic non-pitting arm lymphedema following breast cancer.

Methods: A total of 18 women with non-pitting unilateral postmastectomy arm lymphedema were investigated preoperatively and treated with liposuction as follows: (1) Liposuction aspirate was analyzed in terms of the adipose tissue and free fluid (lymph). (2) The patient's *excess arm volume* was measured by PG and, following treatment by liposuction, was observed until complete reduction of the excess volume was achieved. (3) Dual X-ray Absorptiometry (DXA) and plethysmography (PG) were used to analyze (a) *total arm tissue* and (b) *excess tissue* of the lympedematous arm; weights evaluated by DXA and volumes estimated by PG were compared by use of regression analysis. (4) The total *aspirate volume* was compared both with the *excess arm volume* measured by PG and the *excess arm weight* measured by DXA. (5) The *aspirate fat volume* (i.e. the fat fraction of the aspirate volume) was compared with the *excess fat volume* measured by DXA. (6) The amount of *excess adipose tissue* in the lymphedematous arm was estimated using DXA (Fig. 1).



Fig. 1. Typical DXA image from a patient with a lymphedema of the right arm. The calculated total arm tissue weight was 4675 g in the affected and 2823 g in the normal arm, i.e. an excess tissue weight of 1852 g. The same values for the adipose tissue were 2487 g, 1268 g, and 1219 g respectively.

Results: (1) The aspirate removed under bloodless conditions, achieved by use of a tourniquet, contained 94 percent adipose tissue. (2) A complete reduction of the *excess arm volumes*, as measured with PG, was achieved within 6 months, giving a reduction of 104%, the treated arm thus becoming somewhat smaller than the normal one. Correlations in terms of correlation coefficient (CC) and the coefficient of regression (CR) were all close to 1: (3) the preoperative PG and the DXA analyses of the *swollen arm* of the patients and the *excess tissue*; (4) the *total aspirate volume* and the *excess volume* of the arm, as measured by PG and excess weight of the arm as measured by DXA; and (5) the *aspirate fat volume* removed when tourniquet was applied and the *excess fat volume* as measured by DXA (Fig. 2). (6) DXA was able to estimate the amount of excess adipose tissue in the lymphedematous arm, showing an excess amount of fat of 51 percent.



Fig. 2. Correlation between the total volume of aspirated fat (fraction using tourniquet) and the excess fat volume as measured by DXA.

Conclusion: DXA measurements correlate well with PG measurements. Excess adipose tissue dominates non-pitting chronic arm lymphedema. Liposuction can completely remove the excess adipose tissue, leading to complete reduction of the lymphedema, which cannot be achieved using conservative regimens or microsurgery. The proportion of adipose tissue in the aspirate removed was 94 percent under bloodless conditions, and was 51 percent when using DXA. The discrepancy could possibly suggest an increase in intracellular water, which is probably more difficult to remove than extracellular water when using conservative regimens. Another reason could possibly be that DXA is not sensitive enough to analyze the true extent of adipose tissue hypertrophy, which in another study, using volume rendered computed tomography images, showed an excess of adipose tissue of 81%.

IMAGING AND THERAPEUTICAL STRATEGY

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The lymph-oedema is a complex and disabling and chronic pathology, it causes physical disability, psychological and relational difficulties. For this reason it needs a fit Therapeutic Strategy, which has to be devised by a multidisciplinary Team made up of specialized personnel. The rehabilitative aim is to obtain the best therapeutic result through a combined therapy and to maintain it through the prescription of the garment and an adequate treatment of the pathology. When a patient comes in our Unit of Rehabilitation, the team (physiotherapist and angiologist) begins an Individual Rehabilitative Project and devises a therapeutic program, which can be changed and adapted, thanks to the use of instrumental exams such as the lymphoscintigraphy and the echography. The lymphoscintigraphy gives information about the functionality of the lymphatic circulation and suggests the physiotherapist the alternative pathways to proceed during the Lymphatic Manual Drainage. The echography gives information about the structural features of the examined tissue, showing its liquid and fibrotic component and allowing the physiotherapist to choose the special manoeuvres in the DML and to apply the fit thickness on the compressive bandage. Through the evaluation of instrumental imaging the rehabilitative program is enriched of useful information, thus making the therapeutic strategy even more personalized and efficacious. Everything is made respecting the patient.

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CLINICAL FINDINGS OF LYMPHEDEMA AND LYMPHOSCINTIGRAPHY: OUR EXPERIENCE

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In primary and secondary lymphedema it's very important an early diagnosis and, above all, to assure a primary prevention. The lymphoscintigraphy represents, still today, the diagnostic 'gold-standard' in this way. In our experience of over 600 clinical cases studied by lymphoscintigraphy we observed the following aspects:

- In subjects with blood relation with patients suffering from primary lymphedema, or in subjects with subclinical secondary lymphedema (i.d.: coinciding arms after mastectomy for breast cancer) can be observe some aspects of increased lymph-stasis.
- In secondary lymphedema is more frequent to observe an important dermal back flow on the proximal area of the limb, corresponding to the clinical finding.
- In secondary lymphedema of the upper limb the most frequent aspects are the presence of the dermal back flow on the external area of the forearm (corresponding to the fibrotic concentration on the epifascial tissue and the stop of the tracer in epitroclear area (this last aspect is frequently bilateral).
- A low dermal back flow on thigh or on the arm can demonstrate an early secondary lymphedema. Very important signs of reduction of lymph-transport capacity are the presence of lymph-nodal stop along the limb (as for the upper and for the lower limb); to consider in these cases the choice of the proper lymphatic ways to stimulate to drain the lymph without negative collateral effects on the contra lateral limb.
- A particular development of the lymphatic alternative ways (Mascagni's, sovrapubic, axillo-axillar anterior or posterior) can also demonstrate an auxiliary capability of local lymphatic system.

The lymphoscintigraphy is, in our experience, a very useful technique to evaluate the early diagnosis of lymphedema, the prognosis and also the physical and surgical tailored indications for the treatment.

CASE OF IMMUNODEFICIENCY DUE TO CHYLOUS DYSPLASIA: DIAGNOSTIC ASSESSMENT AND THERAPEUTIC APPROACH

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Background: Among primary immunodeficiencies, common variable immunodeficiency (CVID) is defined by an impaired production of immunoglobulins, characterized by low levels of plasma immunoglobulins and altered antibody response. The case reported was initially interpreted as a CVID.

Clinical case: A male, 20 years old, suffered from diarrhoea (2-4 times a day), weight loss (8 kilos in 5 years), and malnutrition (hypogammaglobulinemia, hypoalbuminemia, leukocytopenia with lymphocytopenia). Accurate diagnostic assessment allowed to diagnose a protein-losing enteropathy. Conventional oil contrast lymphangiography allowed to accurately assess the case and to establish a proper therapeutic approach. The operation consisted in multiple antigravitational ligatures of dilated and incompetent chylous vessels and chylous vessel-mesenteric vein microanastomoses.

Results: Parameters concerning albumin and leukocytes normalized in 2 weeks after operations and remained stable with time, there were no more episodes of diarrhoea and the patient recovered weight.

Conclusions: An accurate diagnostic assessment and above all lymphangiography allow to diagnose properly difficult cases of immunodeficiency due to intestinal protido-dispersion and to plan a correct therapeutic functional approach.

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LYMPH-OEDEMA POST-MASTECTOMY: PRIMARY PREVENTION

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In our laboratory of lymphology, over a period of 7 years, we have followed 304 patients affected with secondary, post-surgery and/or radiation therapy, upper limb lymph-oedema: 22% of them are with coincident arm without clinical evidence of oedema (stage 1A), but at risk of developing lymph-stasis in the homolateral extremity.

Prevention of oedema is possible using lymph-scintigraphy examination, which allows us to analyze anatomic-functional lymph-flow in the homolateral arm and identify patients at risk of oedema onset, who present slower radiotracer flow (presence of lymph-node stops along the extremity which could not be otherwise identified) and include them in early treatment. Furthermore, after having experimented on his own body MLD carried out by physiotherapists, patients learn the easy self-drainage manoeuvres. The patient is provided with a brochure in which the techniques taught during the sitting are illustrated.

It is therefore essential, that the patient undergoing mastectomy should be informed, clearly and simply, about lymph-oedema and must cooperate actively and critically towards the primary prevention. We organize information groups composed of patients, an angiologyst, a physiotherapist and a psychologist, in which the operators explain the anatomy and physiopathology of the lymphatic system and the importance of the hygienic-behavioural rules to be carried out routinely every day. The patient is also informed on skin care to be carried out normally and immediately after an accident. A brochure, which contains the above-mentioned hygienic-behavioural rules, is given to the patient.

With our approach only 11% of patients developed lymph-oedema: this result encourage us to go on with our method.

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SYNOPTIC REVISION OF PREVENTIVE CONCEPTS IN THE TREATMENT OF LYMPHEDEMA

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Our involvement considering the prevention of lymphedema started in September 1992, during the congress of microsurgery in Roma. Since, we have confirmed progressively our opinion. In oncologic pathology, prevention starts before the treatment of cancer (surgery and radiotherapy).

In non oncologic situations, prevention means to explain the importance of the lymphonodal capital to physicians, surgeons, So, we consider that active prevention of lymphedema is divided in three steps.

The most important is to discuss and to convince the non lymphologists colleagues of the particularity of the lymphatic system. Considering our personal experience on 2400 patients treated for lymphedema, 180 are studied and show that the preventive concepts are usefull.

We discuss upon the importance or non importance of sentinal lymphnode and lymphoscintigraphy.

Surgical treatment of Lymphedema

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REHABILITATIVE LYMPHATIC MICROSURGERY: POSSIBLE FULL LYMPHATIC DRAINAGE FUNCTIONAL RECOVERY

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Background: One of the main problems of microsurgery for lymphedema consists of the discrepancy between the excellent technical possibilities and the subsequently insufficient reduction of the lymphoedematous tissue fibrosis and sclerosis.

Methods: Over the past 30 years, over 1000 patients with peripheral lymphedema have been treated with microsurgical lymphatic operations. Of these, about 70% were available for long-term follow-up study. Objective assessment was undertaken by water volumetry and lymphoscintigraphy.

Results: Subjective improvement was noted in 87%. Objectively, volume changes showed a significant improvement in 83%, with an average reduction of 67% of the excess volume. Of those patients followed-up, 85% have been able to discontinue the use of conservative measures, with an average follow-up of more than 7 years and average reduction in excess volume of 69%. There was a 87% reduction in the incidence of cellulitis after microsurgery.

Conclusions: Microsurgical lymphatic operations have a place in the treatment of peripheral lymphedema and should be the therapy of choice in patients who are not sufficiently responsive to nonsurgical treatment. A possible full lymphatic drainage functional recovery can be expected with operations performed earlier at the very first stages of lymphedema.

LIPOSUCTION NORMALIZES ELEPHANTIASIS OF THE LEG – A PROSPECTIVE STUDY WITH A 4 YEAR FOLLOW-UP

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Introduction: Patients with long-standing pronounced non-pitting lymphedema do not respond to conservative treatment [CDT (complete decongestive therapy), CCT (controlled compression therapy), compression pumping (CP)] or microsurgical procedures (such as lympho-venous shunts or transplantation) because slow or absent lymph flow, as well as chronic inflammation, cause the formation of excess subcutaneous adipose tissue which cannot be removed by these methods. Previous surgical techniques utilizing either total excision with skin grafting or reduction seldom achieved acceptable, cosmetic and functional results. The swelling of chronic non-pitting arm lymphedema following breast cancer, can be completely reduced by liposuction and has not recurred during more than ten years' follow-up. Encouraged by this experience, we decided to test the effectiveness of liposuction on leg lymphedema. Patients and methods (median and ranges): 16 patients (12 women and 4 men) with an age of 52 years (21-73) and a duration of leg swelling of 16 years (4-50) underwent liposuction due to nonpitting, chronic lymphedema. There were 7 primary (PL), and 9 secondary lymphedemas (SL) following cancer therapy (cervix, penis, melanoma). In the SL regional lymph nodes were removed in 7, and 7 received postoperative irradiation due to local glandular metastasis. Age at cancer treatment and interval between cancer treatment and lymphedema start were 41 years (23-58), and 5 years (0-26) respectively. All patients had received conservative treatment (CDT, CCT, and/or CP) before surgery without further reduction. All were wearing compression garments before surgery. Aspirate total volume, as well as the concentration of adipose tissue in the aspirate, removed under bloodless conditions, were measured. Pre- and postoperative leg volumes were recorded using water pletysmography. The decrease in the excess volume was calculated as a percentage of the preoperative excess volume.

Results: Aspirate volume was 4249 ml (1360-6940), and the concentration of adipose tissue was 92%. Preoperative excess volume was 4312 ml (n=16). Postoperative percentage reductions were 56% at 2 weeks (n=16), 75% at 4 weeks (n=16), 88% at 3 months (n=16), 85% at 6 months (n=13), 104% at 1 year (n=13), 107% (n=8) at 2 years, 124% at 3 years (n=2), and 125% at 4 years (n=2), i.e. the treated leg became somewhat smaller than the normal one (Figure 1 and 2).



Fig 1. Preop. excess volume 5380 ml (left). Postop. result after 3 years (right).



Fig. 2. Preop. Excess volume 6630 ml (left). 2 years postop (right)

Conclusions: These preliminary results demonstrate that liposuction is also effective for treating long standing chronic, non-pitting, leg lymphedema. Conservative methods and microsurgical procedures cannot remove the hypertrophied adipose tissue (induced by inflammation and the slow or absent lymph flow), which is a prerequisite to achieving complete reduction. Although lower extremity lymphedema has been refractory to treatment because of the combination of fat accumulation and dependency, liposuction provides reductions in volume of up to more than 90%m that are maintained through constant use of compression garments post operatively for up to two years. The short term results are extremely encouraging and warrant continuing follow-up.

LIPOSUCTION OF POSTMASTECTOMY ARM LYMPHEDEMA COMPLETELY REMOVES EXCESS VOLUME: A THIRTEEN YEAR STUDY

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Introduction: Breast cancer is the most common disease in women, and up to 38% develop lymphedema of the arm following mastectomy, standard axillary node dissection and postoperative irradiation. Limb reductions have been reported utilizing various conservative therapies such as manual lymph and compression therapies. Patients with longstanding, pronounced, non-pitting lymphedema do not respond to conservative treatment because diminished lymph flow and inflammation result in the formation of excess subcutaneous adipose tissue. Previous surgical treatments utilizing either total excision with skin grafting or reduction seldom achieved acceptable cosmetic and functional results. Microsurgical reconstruction involving lymphovenous shunts or transplantation of lymph vessels, although attractive as a physiological concept, cannot provide complete reduction in chronic non-pitting lymphedema because it does not eliminate newly formed, subcutaneous adipose tissue collections.

Patients and methods: 94 women with non-pitting edema, a mean age of 64 years (41-89) and a mean duration of arm swelling of 9 years (1-38) underwent liposuction. Mean age at breast cancer operation and mean interval between breast cancer operation and lymphedema start were 52 years (34-80), and 3 years (0-32) respectively. The total volume of aspirate was measured. Pre- and postoperative arm volumes were recorded. The decrease in the edema volume was also calculated both as a percentage of the preoperative edema volume, as well as a ratio between the volumes of the edematous and healthy arms (Fig. 1a, b).



Fig. 1a. A 74-years-old woman with a non-pitting arm lymphedema of 15 years. Preoperative excess volume is 3090 ml.

Fig. 1b. Postoperative result.

Results: Aspirate mean volume was 1955 ml (845-3850). Preoperative mean edema volume was 1729 ml (570-3195) (Figure 2). Postoperative mean reduction values were 98% at 3 months (n=94), 103 % at 6 months (n=91), 107% at 1 year (n=85), 110% at 2 years (n=77), 115 % at 3 years (n=75), 113% at 4 years (n=73), 112% at 5 years (n=71), 111% at 6 years (n=61), 113% at 7 years (n=43), 115% at 8 years (n=33), 116% at 9 years (n=27), 113% at 10 years (n=20), 114% at 11 years (n=16), 131% at 12 years (n=11), and 104% at 13 years (n=5), i.e. the lymphedematous arm was somewhat smaller than the healthy arm. The preoperative mean ratio between the volumes of the edematous and healthy arms was 1.53, rapidly declining to 1 at 3 months, and less than 1 after 1 year (Fig. 2).





Conclusions: These long-term results demonstrate that liposuctioning is an effective method for treatment of chronic, non-pitting arm lymphedema in patients who have failed conservative treatment. Because of adipose tissue hypertrophy, it is the only known method that completely reduces excess volume. The removal of hypertrophied adipose tissue, induced by inflammation and slow or absent lymph flow is a prerequisite to complete reduction. The newly reduced volume is maintained through constant (24-hour) use of compression garments postoperatively.

PREVENTION, RECONSTRUCTIVE MICROSURGERY AND TREATMENT OF SECONDARY TISSUE CHANGES IN LYMPHEDEMAS

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Prevention of iatrogenic lymphedemas is of utmost importance because lymphedemas are difficult to treat. The knowledge of lymphatic pathways and the restriction of the removal of lymphatic glands to the necessary amount are thereby important principles. If however lymphedemas due to a localized blockade occur, lymphatic autografts can reconstruct the damaged lymphatic system successfully and improve the lymphatic transport. Moreover lymphoscintigraphic studies show in cases with clearly visible grafts a normalisation of the lymphatic transport index.

In longstanding lymphedemas secondary tissue changes with a surplus of adipose tissue and heavy fibrosis, additional treatment of the secondary tissue changes may be necessary besides the improved lymphatic transport capacity.

As less invasive method aspiration of the tissue the so called lipolymphosuction, was used in 20 patients (9 upper and 11 lower extremities).

This treatment showed an additional benefit with a significant additional volume reduction in the follow-up period of one year. Immediately after the aspiration there was a short increase in volume, whereas after microsurgical reconstructive procedures an immediate reduction took place.

Despite the possibilities to reduce the secondary tissue alterations reconstructive microsurgery should have its place before secondary tissue changes can develop at a major extent, if prevention was not possible.

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EMMANUIL KONDOLEON: THE MAN BEHIND THE SURGICAL TREATMENT OF LYMPHEDEMA

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Introduction: It is fact that our era is characterized from the rapid improvement and the better treatment in all medicine sections. But we haven't to forget all those who, with their medical actions or inspirations change the data of their era and have gave new advance and progress in medicine and they have left their mark in medical history. One of those is the Greek surgeon Emmanuil Kondoleon (1879-1940)

Material-Method: We studied the archives of Aretaieion Hospital and Hippokration Hospital in which Emmanuil Kondoleon worked. Moreover, we took information from the archives of the Medical History and of Hellenic Surgical Society about his life and his surgical activity which led to the Kondoleon procedure.

Results: His brilliant scientific personality, his numerous teaching activities and his great number of published papers led him to become a Professor of Surgical Pathology. At the begging of the 20th century in which little things were known about lymphedema and especially for its treatment, came the Greek Surgeon E. Kondoleon and with his own technique showed and led a lot of surgeons for more than 50 years in application of surgical treatment of lymphedema. His technique, famous as a Kondoleon's procedure, was a wide excision of the fascia and concomitant partial excision of the hypertrophic tissue in the treatment of the lymphedema.

Conclusion: Kondoleon's enthusiasm and his superb clinical skills led to Kondoleon's procedure which had great influence on the birth and growth of modern lymphatic surgery. Such important persons are stations in medical history and they call us to look them and follow them.

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TREATMENT OF LYMPHOCELES OCCURRING AFTER VASCULAR SURGERY

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Aim. Lymphoceles represent one of the complications occurring after vascular surgery. Their treatment is considered to be as less traumatic as possible because it is intended for patients already operated.

Patients. Seven patients, 5 men and 2 women, aged 29 to 73 years who presented an important lymphocele after vascular surgery, 6 after aorto-bi-femoral by pass (5 superficial in the inguinal region and one deep in the abdominal cavity), and one on the thigh. A surgical drainage was done to one patient , an other a repeated punctures , 5 patients benefited from percutaneous sclerotherapy using povidone iodine.

One patient presented a recurring of lymphocele 72 hours after surgical draining, one an important lymphorea associated to a local infection. The lymphoceles treated by percutaneous sclerotherapy declined.

Conclusions. The surgical treatment and repeated punctures of lymphocele are to be avoided because of important complications (lymphorea, infection). The small lympoceles need clinical and ultrasonographic surveillance with a compressive dressing. Only the big lymphoceles necessitate punctures, but sufficiently spaced. The treatment by percutaneous drainage with povidone iodine can be useful.

PLURYDISCIPLINARY STAFF FOR SURGERY IN LYMPHEDEMA AIM, ARRANGEMENT AND FIRST RESULTS

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Following the International Society of Lymphology consensus the decongestive treatment is the more effective treatment for lymphedemas but only in the countries where it is possible to do it. Even well managed this treatment has it's proper limits. Lymphatic surgery offers large technical approaches (lymphatic collector graft, nodes graft, etc). In France, patients need more and more results for lymphedema treatment. For this reason, the authors have organised a multidisciplinary consultation to take care of those patients. A complete patient assessment was made analysing: the medical story, medical and surgercal past problems, nature of past and actual treatment , previous episodes of surinfection. An ultrasonic evaluation of the venous and arterial circulation was made, using echotomography-doppler. A lymphoscintigraphy examination was analysed by a lymphologist. The in course of time stability of the results and the quality of lfe was evaluated, both by the surgeon and the physiotherapist. If the actual conservative treatment has not been satisfactory done, a new sequence has been realised. Surgical treatment (node graft) following clinical and lymphoscintigraphic datas of the given and received sites, was reserved for clinical failures of decongestive therapy. An intensive decongestive treatment is realised during 15 days before surgery. Hospital care is generally 3 days. Sessions of manual lymphatic drainage with multi layer bandaging are prescribed. The follow-up of the post operative period was assessed by a plurydisciplinary consultation at 15 days - 1 month - 3 month - 6 month. A new lymphoscintigraphy has been realised.

A score of satisfaction has been established by the patient himself, the surgeon, the physiotherapist and the lymphoscintigraphist. The author analyse the first results for 20 patients with upper limb and lower limb lymphedemas, during a mean follow-up of 12 months.

Clinical and epidemiological aspects in lymphatic diseases

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IMMUNOSTIMULATION AND DECREASE OF PHLOGISTIC COMPLICATIONS IN LYMPHEDEMA PATIENTS: PRELIMINARY STUDY

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The phlogistic complications in primary and secondary lymphedema are often a difficulty for the maintenance of the clinical results of the treatment. In some cases the lymphangitis are recurrent during the year and increase the fibrotic complication on the affected limb. We studied 30 patients suffering from lymphedema (11 primary and 19 secondary), age raging from 24 and 65 years (21 females and 9 males). Patients have presented, in the last year, at least 2 episodes of lymphangitis. We performed a vaccination with a spray nasal preparation adversus Staphilococcus, Streptococcus, Klebsiella and Hemophilus. The procedure lasted 10 weeks (1 application/day). In a follow up year we observed the following aspects:

- An average decrease of the incidence of lymphangitis of 67% (36 respect to 105 of the previous year)
- An average increase of IgM of 27%
- An average increase of IgG of 34%
- An average increase of IgA of 46%
- Clinical stabilization in 81% of patients

This preliminary study suggest us that a specific vaccination to improve the self immunostimulation in lymphedema patients can help the patients to avoid the phlogistic complications (togheter to the igienic and behaviour rules) and to avoid the use of chemioantibiotic therapy.

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ACUTE LYMPHANGITIS: A LYMPHANGIOLOGICAL EMERGENCY AND ROLE OF MODERN EMERGENCY UNITS

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Introduction: The strict triage codification that has for many years been applied in Emergency Units has classified patient conditions into emergencies, urgencies, or deferrable urgencies. As part of medical-surgical conditions and in particular those concerning lymphology, acute lymphangitis is a clinical condition which – just like all other acute cardiovascular diseases - must be considered as undeferrable urgency.

Materials and Methods: The experience developed over the years by the Authors in an Emergency Surgery Unit, with links to the special Lymphangiological Excellence of the School of Genoa, has made it possible to collect data on acute lymphangiological diseases referred to Emergency Units and their specific features linked to an often poorly known and neglected field.

Discussion: From collected data, 1% of patients being admitted in Emergency Units report symptoms attributable to lymphatic circulation diseases (lymphangitis, erysipelas, lymphoadenitis, lymphoedema). Since about 40 million patients are reported every year in ERs of Italian hospitals, this clinical condition cannot be considered marginal at all.

Therefore, it is key to provide emergency doctors with the necessary diagnostic and therapeutic tools to face these specific lymphangiological urgencies. A correct information and awareness raising campaign must be promoted about lymphangiological conditions that until now have mistakenly been disregarded and neglected.

SECONDARY LYMPHOEDEMA AND FUNCTIONAL CONCATENATION OF FAILURES IN LOCOMOTORY SYSTEM IN CASE OF UPPER LIMB

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Introduction: Postoperative state has for its consequence even functional concatenation of failures in locomotory systém (LS) especially in the area of chest and of upper limb (UL) homolaterally. Symptoms of metabolic changes exibit in this part in case of formation of secondary functional lymphoedema.

Further important fact for vascular and locomotory system is syndrom of immunocomplexes (IMC).

Follow-up fibrosclerotic transformation of skin, subcutis and fascias represents qualitative changes leading to functional concatenation of failures in the area of chest, shoulder joint and UL – homolaterally.

Considering the anatomic location of 6 territories of lymphstream on the UL, mostly heading to axial nodules, there is most often concatenation of failures with failure of extension function on the UL homolaterally (Lewit's clasification).

Spasms to contractions of fascias with muscle's dysbalance appear and functional secondary functional blockades of ribs, spinal column and joints of UL.

Set of patients: During our 15 years' research we treated 351 patients (333 women, 18 men).

By myoskeletal examination, all 96,3% of patients we made a diagnosis of functional blockade of the 1st and the 4th rib, Th4/5 - flexion, C7/Th1- rotation, C0/C1 – anteflexion. As well as joint dysfunction of: shoulder, cubitus and capitatums. We can notice raising of the muscle's tonus: m. pectoralis, m. subscapularis, sternomastoid, m. scalenus, flexors of fingers, wrists and pronators – homolaterally.

Important article of pathogenic processes of locomotory lymphoedema failures of the UL is besides spasms of scars - the spasm of muscles m.subscapularis a mm. pectorales.

Methodology: In addition to timely treatement of scars and lymphoedema by manual lymphatic drainage (MLD), we also use techniques of myoskeletal medicine: postisometrick relaxation (PIR) acc. to Zbojan on the area of m. subscapularis and event. also on pectoralis, with explanation of autotherapy. Finally we make a mobilisation of functional blockade of spinal column, shoulder joint and periphery on UL.

Aim of the study: The aim of this study is to emphasize the necessity of comprehensive approach in therapy of functional failures in case of postmastectomy lypmphoedema. The combination of manual lymphatic drainage with diagnostic and the techniques of myoskeletal medicine and of course with active patient's integration to the process of healing. By this way we can achieve significant reduction of the total duration of treatement.

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TWO YEARS D.H. REHABILITATION ACTIVITY ON LYMPHEDEMA PATIENTS: EPIDEMIOLOGICAL DATA

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During the last two years (March 2006 – February 2008) we had on charge 315 patients suffering from lymphedema (187 females and 128 males, age raging from 0 and 83 years, 69 primary lymphedema and 246 secondary one). In particular we observed the following aspects:

Lymphedema	F	М	< 40 Years	> 40 Years	Previous lymphangitis	Skin complications	First clinical stages (I-II)	Last clinical stages (III-IV)
Primary	42	27	43	26	34	41	11	58
Secondary	179	67	59	187	102	136	7	239

179 patients were at the first clinical observation; 136 were treated at list from another clinical TEAM (until to 7 different clinical TEAM = medical nomadism).

We performed to all patients the tailored combined physical treatment (from 12 to 25 treatments in function of the clinical variability) and we concluded the cycle with the prescription of the definitive garment and with the concordance with the patient on the date of monitoring. We observed the following results:

Results clinical and functional	Very good	Good	Sufficient	Poor	Death
Primary	42	12	8	7	_
Secondary	112	79	32	23	3

In conclusion, a global approach to the lymphedema patient permits us to obtain in several cases best clinical results. Very important for maintain the results it's the continuous follow up.

ITALIAN MINISTRY OF THE HEALTH: NATIONAL GUIDELINES ON LYMPHEDEMA

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In 2006 the Italian Ministry of the Health apointed some national experts in a dedicated Commission to draft the "National Guidelinees" on the illness.

In Italy, actually it's used the clinical stadiation in five stages; This stadiation underlines the first stage, the pre-clinical stage (both for the primary and for the secondary lymphedema) and the fifth stage, with complicated elephantiasis.

In this moment, by the International Classification of Functioning promoted by the World Health Organization, the lymphedema can be cosidered under the point of view bio-psycho-social, based on a comprehensive approach to the disfunctions of the patient, with consequent evaluation of the rehabilitative needs.

The lymphedema represents a complex pathology, a social illness for the physical, psychological and social involvment of the patient, as for the primary and for the secondary kind.

For the recognition of the illness are basilar the clinical critherium (anamnesis and clinical examination) and the Lymphoscintigrafic exam, as for the primary and for the secondary lymphedema.

The authorized specialists to recognize the illness are the angiologist, the physiatrics, the surgeons, the vascular surgeons, the onchologists or other experts specialists. After the recognition patient can be registered on a dedicated dipartimental register. For the diagnosis were indentified three levels. The firts includes the lymphoscintigraphy, the High resolution echography and the colourdoppler of the limbs. The second, the Computering tomography, the MRI and the Lymphography; the third, other particular exams tailered for each clinical case.

For the treatment best results can be obteined with an early combined therapy. All kind of treatments are depending from the clinical stage and from the patients compliance.

For the surgical therapy must underline the microsurgical treatment by means derivative or reconstructive anastomosis according to Professor's Campisi Method.

For the physical treatment must enfatize the association of various techniques, manual and mechanical; first of all the manual lymphatic drainage and the elastocompressure.

À very important condition, included on the guidelinees, is the proscription of the monotherapy, still today, in Italy, performed by more and more sanitary structures.

For the garments, indipendently from the yearly number, is assured a compartecipation to the cost by the Sanitary System; fifty% of the costs for the second class; Seventyfive% for the third class and 100% for the fourth class.

In lymphedema patient it's very important also the monitoring of quality of life. Best questionnaire is the SF-36 that includes the somatic and the psychological aspects of the perception of the illness.

More important is also the primary and secondary prevention. For this aim is basilar the execution by the patient of the lymphoscintigrafic exam.

In function of the clinical stage there is also in Lymphology a priority setting. It's very important, in all cases, to promote an early diagnosis and an early treatment. The lymphedema represents, in more and more cases, an urgence, at list, of kinesitherapeutic kind.

Anatomy and pathophysiology of lymphatics disorders

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DEVELOPMENT OF LYMPHATIC VESSELS IN HYPERTROPHIC HEARTS

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Objective: In order to elucidate the function of lymphatic vessels in hypertrophied myocardium, I measured the densities of epicardial lymphatic vessel of the hearts with various degrees of hypertrophy.

Materials and methods: Randomly selected autopsied hearts were used in this study. The densities of epicardial lymphatic vessels were measured on cross sectional histological preparations subjected to D2-40 immunohistochemistry. The total cross sectional areas of epicardial veins were measured on adjacent preparations subjected to elastica van Gieson stain.

Results: The densities of the epicardial lymphatic vessels increased proportional to left ventricular weights without limitation so long as we measures. The total cross sectional areas of epicardial veins increased in accordance to left ventricular weights up to 100 g, but, later in reached a plateau and never increased any more.

Discussion: Both lymphatic and venous systems perform fluid draining function in myocardium. The lymphatic system seems to have more ability of development than the venous system to respond to increased fluid draining function caused by cardiac hypertrophy.

ADIPOSE TISSUE DOMINATES CHRONIC ARM LYMPHEDEMA FOLLOWING BREAST CANCER: AN ANALYSIS USING VOLUME RENDERED CT IMAGES

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Background: Arm lymphodema is a common complication after breast cancer treatment. Various types of conservative and surgical treatments have aimed at reducing the arm swelling, but most of these have failed due to chronic edema eventually being transformed from an accumulation of lymph fluid to an increased deposition of subcutaneous fat (i.e., to a non-pitting lymphedema). Liposuction is a safe and reliable method for reducing the excess fat without recurring deposition of it. The objective of the present study was to obtain empirical evidence confirming clinical observations of the presence of excess adipose tissue in patients with chronic nonpitting arm lymphedema following breast cancer.

Methods: A total of 11 women with non-pitting unilateral postmastectomy arm lymphedema were investigated and were treated as follows: (1) The proportion of adipose tissue in the aspirate was analyzed. (2) The patient's *excess arm volume* was measured by plethysmography (PG) and, following treatment by liposuction, was observed until complete reduction of the excess volume was achieved. (3) Volume-rendered CT images (VR-CT) and PG were used to analyze *arm volume* and *excess volume* of the lympedematous arm, the respective volumes being compared by use of regression analysis. Liposuction aspirate was analyzed in terms of the distribution of adipose tissue and free fluid (lymph). (4) The total *aspirate volume* (fat and fluid) was compared both with the *excess arm volume* measured by VR-CT and by PG. (5) The *aspirate fat volume* was compared with the *excess fat volume* measured by VR-CT. (6) The amount of *excess adipose tissue* in the lymphedematous arm was estimated using VR-CT (Fig. 1).





Results: (1) The aspirate removed under bloodless conditions, achieved by use of a tourniquet, contained 93 percent adipose tissue. (2) A complete reduction of the *excess arm volume*, as measured with PG, was achieved within 6 months, with a mean reduction of 109%, the treated arm thus becoming somewhat smaller than the normal one. Correlations in terms of correlation coefficient (CC) and the coefficient of regression (CR) were all close to 1: (3) the preoperative PG and the VR-CT analyses of the *swollen arm* and the *excess volume*; (4) the *total aspirate volume* and the *excess volume* of the arm as measured by PG; and (5) the *aspirate fat volume* and the *excess fat volume* (Fig. 2). (6) VR-CT was able to estimate the amount of excess adipose tissue in the lymphoedematous arm, showing a mean excess amount of fat of 81%.





Conclusions: VR-CT measurements correlate well with PG measurements. Excess adipose tissue dominates non-pitting chronic arm lymphedema. This excess volume cannot be removed by use either of conservative regimens or of microsurgery. Liposuction can completely remove the excess adipose tissue, leading to complete reduction of the lymphedema.

AXILLARY WEB SYNDROME: MORPHOLOGICAL APPROACH

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The axillary web syndrome (AWS) is localized and measured on 15 patients.

The development of AWS is starting in the axilla, reaching the anterior side of the arm till the elbow and the forearm ending near the base of the thumb.

This AWS is present by 25% of our population (229 patients) restricting the abduction (50°) and the anterior elevation of the shoulder (30°) .

We have localized, by mean of cadaver dissection, the lymph vessels of the upper extremity.

The AWS corresponds to the radial anterior pedicle on the level of the forearm and to the brachial anterior pedicle on the level of the arm.

This pedicle is the only one pedicle penetrating directly the axilla. The AWS is probably part of this thrombosed lymphatic pathway.

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RIGHT PHYSIOPATHOLOGICAL KNOWLEDGES OF LYMPHEDEMA LEAD TO THE APPROPRIATE MANAGEMENT

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Lymphedema is the result of different physiopathological mechanisms; lymph flow may be absent or really reduced. The most commun state consists in the absence of lymphatic vessel or in the important reduction of lymphatic vessel number; it is also possible to observe morphological alterations of valves or the destruction of them. The lymph flow is nul or very insufficient. This is characteristic of an organic origin.

A similar phenomenon occurs if reduced lymph flow is accompanied with complete venous occlusion. This case must be considered as the deficiency of the security valve.

Another aspect is represented by functional disturbances. In case of dilated lymph vessels the propulsion of lymph is not well performed. In other circumstances the correct activity of morphological normal vessels is altered, the lymph flow is reduced. On the other hand some physiopathological situations are related with an initial high lymph flow. This concerns:

- hypervascular permeability which permits invasion of the interstitial space by a lot of proteins and water. The lymph flow is very elevated and when the drainage is overwhelmed edema and lymphedema occur.

- Occlusion of the venous circuit.

- If the occlusion is not complete, the lymph flow increases and at first prevents the onset of edema. Lymph drainage capacity may be overwhelmed and edema and lymphedema occur.
- If the venous occlusion is complete, very quickly lymph drainage capacity reaches its maximum level, becomes overwhelmed and leads to lymphedema onset.
- Another similar state exists in case of right cardiac insufficiency.

It is of great interest to have a right knowledge of these different situations in order to adopt the adequate management ; it may changes if the patient has no lymph vessels or if he suffers from lymphatic functional insufficiency.

THERMAL VARIATIONS DURING 24H AT THE INTERFACE SKIN-MULTILAYERED BANDAGING IN LYMPHEDEMA

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The use of heat as therapeutic vector in the physical treatment of lymphedema secondary to filariasis has mainly been developed in China and in Japan.

The affected limb is heated by a humid and warm cloth that is wrapped around it in order to help to reduce its volume.

In Europe this therapeutic approach has also been transposed to primary lymphedema. The raise of temperature of the limb is achieved through physical means such as exposure to infrared rays, electromagnetic waves or vibrations of high frequency warming up the tissue by cavitation.

Some authors affirm that *«The temperature of the heated skin with its subcutaneous tissue of the diseased limb is increased, its metabolic activities are reinforced, and the lymphatic regeneration and lymphatic return are restored to meet the therapeutic goal».* Lymph Stasis: Pathophysiology, Diagnosis and Treatment - W.Olszewski

This therapeutic approach has been excluded from the guidelines because of the risk of burning skin. Furthermore, studies show that all physical means used to heat the tissue have resulted in an increase of the skin's temperature of not more than $4 \,^{\circ}$ C, even if in certain systems (ovens) the temperature reached $80 \,^{\circ}$ C.

Skin temperature under multilayer bandages reached the same values.

The efficiency of bandages as far as the reduction of the volume of lymphedema is concerned does not need to be demonstrated anymore.

However, the physical and physiological mechanisms of this positive effect remain little explored with regard to their diffusion and use. This interesting report covers the results of experiences establishing the variation during 24 h of the skin's temperature at the interface skin-multilayered bandages of patients affected by upper limb secondary lymphedema. The measures were taken by 4 temperature sensors, sensitive at 0,1 °C. The values were registered (3740/24H) with a mobile data logger fixed on the belt of the person. Three temperature sensors were placed on the skin under the multi-layer bandage and a reference sensor was placed (uncovered) on the healthy arm. The data were then downloaded and analysed.

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PRE-CLINICAL RAT MODEL OF LYMPHEDEMA: FROM MASSAGE TO AMIFOSTINE

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Clinical and basic research on the development and treatment of lymphedema has been hampered by the lack of available standardized and comparable groups of patients. Many investigators utilize the most numerous and closely related group of breast cancer-related lymphedemas for clinical trials and structured observations. However, even within this less heterogeneous group, multiple variables exist including: stage of tumor, types of operations and subsequent radiation and/or chemotherapy, presentations of lymphedema, differing genetic backgrounds and body forms, ages, health status, co-morbidies, compliance issues, etc. Because of the need for standardized subjects and in particular to closely mimic the most studied group of lymphedema patients, we undertook to reproduce and then improve a rodent model of breast cancer-related lymphedema and then to subsequently use this model to test various treatments and preventive measures. Wistar-fuzzy rats underwent radical right lymphatic/nodal groin excision with a circumferential dermal gap followed by 45 Gy irradiation two days later in an analogous manner to breast cancer treatment. Rats were monitored weekly for changes in limb volume calculated from serial circumferential measurements using the truncated cone formula. In subsets of rats, we tested physical treatment measures including massage (in the form of miniaturized manual lymph drainage -MLD) and combined physiotherapy (CPT) and preventive measures ranging from the commonly used MLD to the putative radioprotectant amifostine (a cytoprotective agent used in cancer chemotherapy and radiation therapy). Both daily MLD and CPT treatments produced significant reductions in lymphedema volume after one week of treatment. MLD alone did not have a preventive effect on the development of lymphedema. In this model, the amifostine-treated rats had lower percent volume increases after initial lymphedema development and showed improved wound healing at all time points with nearly completely healed wounds at 12 weeks compared to open, draining gaps in control rats. Thus, we have been successful in improving this rodent model of cancer treatment-related lymphedema, which offers a standardized group of experimental and closely matched control subjects for pre-clinical investigation. Our results also demonstrate that a range of different treatment and preventive measures can be evaluated using this standardized model. This approach can be used to understand underlying mechanisms of lymphedema, improve/modify current treatments for patients in the clinic as well as lead to developing better (including molecular-based) treatment/prevention strategies for the future.

SURVEY OF PHYSIOLOGY FEATURES OF MANUAL LYMPHODRAINAGE - EXPERIMENTAL WORK

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Treatment of lymhedema is a long process not only for the patients but for lymphoterapeuts too. A number of techniques for decongestive treatment of lymphedema are recommended, but clinically most effective is manual lymhodrainage. The question is why the manual lymhodrainage is effective? The answer is in the physiological parameters of this technique. Our laboratory has for period 15 years solved these problems experimentally in the dogs and in some patients. We solved these questions:

- 1/ How high are pressures in lymphatics.
- 2/ Lymphatic flow in relaxed situation and after rapid and slow lymphodrainage.
- 3/ Suction effect of manual lymphodrainage.
- 4/ Lymph proteins in non swollen leg before and after manual lymphodrainage.
- 5/ Lymph proteins in lymhedema area before and after manual lymhodrainage.
- 6/ Lymph flow in lymphatics of the scar before and after manual lymphodrainage.
- 7/ Lymph flow before and after application of laser beam and manual lymphodrainage.
- 8/ Lymph flow before and after application of nerve –muscle stimulater (electronic pulse massager) and after manual lymphodrainage
- 9/ Lymph flow before and after application of vibrator massager and after manual lymph drainage.

The results certify from the different points the effectiveness of manual lymphodrainage. The term of "normal value" of lymph flow is discussed.

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MORPHOPATOLOGIC – LYMPHEDEMA IS A TISSULAR CONNECTIVE HYPERPLASIA

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Romanian Society of Lymphology

Lymphangiostasis initially induces interstitial macromolecular stasis witch determines oncotic water retention that consists the non inflammatory hyperproteic edema. Consequently mezenchimal cells: fibroblasts, mast cells, macrophages have a metabolic response and generate connective hyperplasia.

We studied those aspects by morphopatlogical, paraclinical and imagistic findings over a period of fifty years (1959-2008) in over 1000 patients with partially reductible or unreductible lymphedema.

In clinical lymphedema status, volume expansions of extra aponevrotic structures ar tributary to displasic adipocitary hyperplasia, to fibrosclerosis. Meantime the hialuronic acid (HA) accumulates witch "bounds" edema liquid as "gel" in the connective extracellular matrix.

Those three structural morphopatological elements are features of clinical limphedema (in contrast with lymphostasis): 1. asymmetric adipocitar hyperplasia, 2. hypertrophic fibrosclerosis, 3. gel – HA stasis and hyperproteic stasis (interstitialy: 1/4 of plasmatic protein concentration) and witch it confers its therapeutic and repose irreductibility.

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THE SHORT TIME EFFECT OF RADIATION THERAPY ON THE NEWLY FORMED LYMPHVESSELS

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In this study we have tried to understand the influence of radiotherapy on the regeneration of lymphatic vessels.

Method and results: 3 groups of mice were selected: one normal group, one group where the lymphvessel was cut and one group where the lymph vessel was cut and irradiated afterwards. At intervals (4 to 9 weeks) the lymph flow (from the inguinal to the axillar lymph node) was evaluated. To do so we used two complementary techniques.

The first technique was the lymphoscintigraphy on mice in order to compare the lymphflow between the three groups. Here we came to the conclusion that even in the group where we made an incision together with an irradiation of the lymphvessels the flow between the inguinal and axillary lymph made seemed to be restored completely.

The second technique that we have used is the dissection.

In this way we could see how the lymphflow was restored. The transillumination technique allowed us to observe that there were many complementary lymphvessels who were formed to restore the lymph flow but not in the original pattern.

Conclusion: We could not observe an inhibition of the regeneration of lymphatics after irradiation.

We could observe an increase of the lymph flow perhaps due to the ongoing lymphangiogenesis.

We could observe many supplementary lymph vessels who appeared and who are of great importance for the physical therapy treatment.

LIGHT AND ELECTRON MICROSCOPY STUDY OF D2-40 EXPRESSION ON LYMPHATICS

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Introduction. The immunohistochemical identification of lymphatic vessels by light microscopy is a useful tool for a general evaluation of lymphatic system itself, e.g. during tumour cell invasion. In order to identify the real nature of the observed vessels, it requires the simultaneous use of several lymphatic and blood endothelial markers, which could represent a technical problem. On the other hand, transmission electron microscopy (TEM) alone allows the distinction between blood and lymphatic vessels, even without specific endothelial markers and on the basis of vessels morphological features, but it is not a common tool to be used for a general screening. This study aims at verifying the immunohistochemical expression and ultrastructural distribution of the endothelial marker D2-40 in lymphatic endothelium, both by light and transmission electron microscopy, an aspect which was poorly investigated up to now. The compared study was performed on normal mouse large intestine samples (colon). The pan-endothelial marker CD31 was used as well to confirm blood and lymphatic vessels. Material and methods. Immunohistochemistry: For light microscopy samples were fixed in 10% buffered formalin and embedded in paraffin. Four μ m-thick sections were cleared by xylene and rehydrated in alcohols, therefore they were incubated in anti D2-40 (1:160, Dako) and anti CD31 (1:800, Dako) monoclonal antibodies. After washing in PBS, sections were incubated in biotynilated secondary antibody and in peroxidase-conjugated avidin-biotin complex (Vectastain Elite, Vector Laboratories). Finally, the reaction was visualized by DAB. Immunoelectron microscopy: For TEM samples were fixed in 4% paraformaldehyde in PBS and embedded in London Resin White (London Resin Co., London, UK). After lymphatic vessels detection by semithin sections, serial ultrathin sections were cut and mounted on nickel grids. Sections were then incubated in anti D2-40 (1:16, Dako) and anti CD31 (1:80, Dako) monoclonal antibodies. After washing in PBS, sections were incubated in 10 nm-colloidal gold particles conjugated secondary antibody (Sigma). Finally sections were stained with uranyl acetate and lead citrate to be observed by TEM. Results. By light microscopy D2-40 expression was found to be located in endothelial cells of typical initial small diameter lymphatic vessels, with thin flattened endothelium and enlarged and irregular lumen devoid of red blood cells. The marker was also present in larger lymph-conducting lymphatic vessels, even though with a lower frequency. The lymphatic vessels represented 11% of all vessels and were generally strictly associated with D2-40-negative blood vessels. CD31 was always present on both blood and lymphatic vessels. By TEM, D2-40-conjugated colloidal gold particles were mainly found in ultrastructurally typical lymphatic vessels: corrugated endothelial wall, absence of basal membrane, pores and open junctions. Very flattened endothelial cells were joined by end-to-end and overlapping intercellular contacts, fixed by tight and gap junctions. No immunostaining was observed in small or large arteries and veins, nor in blood capillaries adjacent to lymphatic vessels. As far as D2-40 distribution in endothelial cells is concerned, colloidal gold particles were found on both luminal and abluminal surfaces. Seldom gold particles were found at intracytoplasmatic level. CD31 expression was observed in both blood and lymphatic vessels also by TEM. Conclusions. In all observed sections, both by light and electron microscopy, D2-40 specifically marked lymphatic vessels endothelium, resulting a very reliable marker of lymphatic system. We can therefore conclude that D2-40 is a selective marker of lymphatic endothelium. The immunostaining was particularly evident in initial lymphatic vessels where cell transendothelial passage is known to occur. Luminal and abluminal endothelial distribution of D2-40 could suggest a role of this molecule in transmembrane transport.

Lymphedema Management

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TRANSLATIONAL MEDICINE, PHARMACO/SURGICOGEOMICS, AND THE INTERNATIONAL SOCIETY OF LYMPHOLOGY

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Among the latest megatrends in medicine are 1) a renewed emphasis on "translation," i.e., bringing laboratory advances more rapidly into the clinic and to the general public (bench \rightarrow bedside \rightarrow community), and 2) an exploding interest in "pharmacogenomics," i.e., developing personalized drug regimens tailored to the patient's specific genotype. Perhaps equally important yet less emphasized should be the raising of questions in the public health arena and in individual patients (including those with rare monogenic conditions) and then returning to the laboratory to find answers, i.e., the multilingual bidirectional round trip in the translational process. Moreover, little attention is paid to "translational surgery" and "personalized surgery," i.e., operative treatment tailored to the individual patient's well-defined pathophysiologic processes rather than broad diagnostic categories, including defining the specific genetic abnormalities ("surgicogenomics"). Examples of these two intertwined megatrands – translational and personalized medicine – will be highlighted from medicine's past and present and specifically from lymphology, and a future agenda envisioned for the ISL.

"LYMPHOLOGY OUTPATIENT CLINIC" BETWEEN EXPERIMENT AND COMMUNITY REALITY

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With over 2000 reported medical examinations/treatments conducted in 2007, the Lymphology Outpatient Clinic operating as part of the Provincial Health Service (ASL) of Alessandria has by now become a privileged observatory for the study of lymphatic circulation diseases.

Initially started thanks to the historic expertise of the Lymphangiology School of Genoa, directed by Prof. C. Campisi, and by the vision of some Health Service Administrators and Managers of Piedmont, the Clinic has made it possible to determine the regional incidence of some lymphatic circulation diseases, the general needs of the local population, as well as the therapeutic-rehabilitation requirements of patients. A forward-looking approach was followed based on EBM, on more comprehensive rehabilitation-therapeutic actions, on one hand, and on the inevitable and rigorous containment of health costs and available resources, on the other hand. The outpatient clinic has been able to achieve results that until now had been reported only by the successful experience of few Centers of Excellence under University Hospitals. In this extensive and well developed Province of Alessandria, the clinic has come in contact with the local community, and it has understood the local population needs, in terms of treatment, as well as of more ambitious and yet feasible prevention actions.

Therefore, in this article, we will report on data concerning this new and active outpatient unit and its likely impact on university research and on future investments in lymphangiology.

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PSYCHO-SOCIAL PATTERNS OF LYMPHEDEMA PATIENTS AND LONG-TERM RESULTS OF MANAGEMENT

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The monitoring of lymphedema represents a very difficult practice for all the rehabilitative TEAM. The lymphedema is a chronic and impairing pathology, prone to phlogistic complications and clinical fresh outbreak: for this reason patient is prone to the 'medical nomadic'. We studied the long-term results in 106 patients suffering from lymphedema (69 females and 37 males) age raging from 26 and 75 years. In a follow up year we observed the following aspects in function of the age, the social and economic conditions and the educational level:

	Good results	Sufficient results	Poor results
20-40 years	60	25	15
41-60 years	54	32	14
61-75 years	49	39	12
High Educational level	55	27	18
Medium educational level	57	24	19
Poor educational level	46	40	14
Good economic level	68	21	11
Sufficient economic level	52	38	10
Poor economic level	39	43	18

This study demonstrated that the most important aspect to maintain the long-term clinical results in studied patients were the economic level; second the educational level and third the age of the patient. This aspect must be considered for establish the proper rehabilitative project and to decide the tailored time of the follow up in each clinical case.

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THE "CONCORDANCE MODEL" IN THE MANAGEMENT OF LYMPHEDEMA

A. MOLISSO

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Patients knowledge of their disease may increase the performance and the results of the planned treatment. The model that we suggest empowers to truly get to know an evidence-based care for patients with lymphedema. The focal point is te distinction between the concepts of Compliance, Adherence and Concordance. Because the wellbeing is a common objective for all, we believe that a correct health information, and the motivation, the active participation and the sense of responsibility by the patients are the areas to develop in case of long term management like lymphedema is. In this way the concordance model that we suggest is probably able to obtain in lymphedema management a good performance according to the international Guidelines.

DISABILITY SCALE FOR OEDEMA

M. RICCI

Director of SOD Medicina Riabilitativa, Azienda Universitario-Ospedaliera Ospedali Riuniti Ancona

The author shows the use of disability scale for oedema (Fig 1). In 2001 it had been introduced to the group of people who wrote the Italian guide lines of oedema diagnosis and treatment. This scale is about the category of activity of International Classification of Functioning (ICF) and their evaluation. The author proposes to analyse all the codified activities potentially modified by oedema (Fig. 2 and 3) and explore them with anamnesis and objective exam in order to obtain a value for the loss of activity. The sum of the obtained values shows the disability numeric index. The mean of values shows the level of disability as reported in the scale. The obtained value will be assimilated to the nearest one. It means that 1,40 will be 1; while 1,70 will be 2. The highest value shows the highest disability of the patient related to that activity. The author also explains the 7 rules which regulate the scale.

LEVEL	DEFINITION	DESCRIPTION
0	No Disability	The patient lives his life without restrictions, also by using orthesis.
1	Low Disability	The patient shows a low disability in at least one of the activity codified by ICF.
2	Medium Disability	The patient shows a medium disability in at least one of the activity codified by ICF.
3	High Disability	The patient shows a high disability in at least one of the activity codified by ICF.
4	Total Disability	The patient shows a total disability in at least one of the activity codified by ICF.

Fig. 1

UPPER LIMB						
	Sub- groups	0	1	2	3	4
d155 Ability acquisition						
d430 Raising and carrying objects						
d440 Specific use of the hand						
d470 Using transport means						
d510 Washing						
d520 Taking care of the single body parts						
d540 Dressing						
d630 Making meals						
d640 Doing houseworks						
d650 Taking care of the single house objects						
d710 Simple interpersonal relations						
d720 Complex interpersonal relations						
d730 Relationing with strangers						
d740 Formal relations						
d750 Social informal relations						
d760 Family relations						
d770 Personal relations						
Job and employ (d840-d859)						
d920 Free time						
d930 Religion and spirituality						
d950 Politic life and citizenship						
MEDIUM DISABILITY		##				
HIGHEST DISABILITY						

LOW LIMB	-			-		
	Sub- groups	0	1	2	3	4
d155 Ability acquisition						
d410 Changing body position						
d415 Maintaining body position						
d420 Moving						
d450 Walking						
d455 Shifting						
d470 Using transport means						
d475 Driving						
d520 Taking care of the single body parts						
d530 Bisogni corporali Reliving oneself						
d540 Dressing						
d640 Doing houseworks						
d650 Taking care of the single house objects						
d710 Simple interpersonal relations						
d720 Complex interpersonal relations						
d730 Relationing with strangers						
d740 Formal relations						
d750 Social informal relations						
d760 Family relations						
d770 Personal relations						
Job and employ (d840-d859)						
d920 Free time						
d930 Religion and spirituality						
d950 Politic life and citizenship						
MEDIUM DISABILITY		##				
HIGHEST DISABILITY						
HIGHEST DISABILITY Fig. 3						

	Thursday 26 June
	Workshop
	Lymphedema treatment
H. 09.00	Introduction Michelini S. (Italy)
H. 09.15	The Conservative Treatment of lower limb lymphoedema: from decongestion to hosiery Corda D. (<i>Italy</i>)
H. 10.00	Tailored Garments for Lymphedema for the lower extremities Vollmer A. (<i>Germany</i>)
H. 11.00	Lymphological aspects of lipedema Földi E. (<i>Germany</i>)
H. 11.40	Combined Decongestive Physiotherapy of Lymphedema Failla A., Moneta G. (<i>Italy</i>)
H. 12.00	Upper limb lymphedema management Ricci M. (Italy)
H. 12.20	Discussion
H. 13.00	Lunch
H. 14.00	The incidence of MLD on cardiac parameters Leduc O. (<i>Belgium</i>) <i>co-authors:</i> Crasset C., Koziel A., Baptiste N., Delahaie C.
H. 14.20	Critical aspects, social problems, and complications in elastic bandaging of limphedema today - Analisys at 360 degrees De Filippo G. (<i>Italy</i>)
H. 14.40	Efficacy of lymphedema treatment assessed by quantitative measures of ultrasound one year follow up Iker E. (USA)
H. 15.00	Lymphedema post-mastectomy: primary prevention Cestari M. (Italy)
H. 15.20	Indications, techniques and results of lymphatic microsurgery Boccardo F. (<i>Italy</i>)
H. 15.40	Physical effects of compression techniques Belgrado J.P. (<i>Belgium</i>)
H. 16.00	Garments in Lymphedma Forner Cordero I. (Spain)
H. 16.20	Our experience in the treatment of the leg ulcers Carbone F., Viola D., Bracale G.C., Ficarelli I., Bracale P. (<i>Italy</i>)
H. 16.40	Discussion

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