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THE EUROPEAN JOURNAL OF lymphology

and related problems

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SUMMARY

XXXVII Congress of European Society of Lymphology

Warsaw (Poland) - 3-4 June, 2011

Medical Research Center, Polish Academy of Sciences
 5 Pawinski Street , 02-106 Warsaw, Poland

*Clinical Sciences***Physiology and Diseases of the Lymphatic System**

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THE EUROPEAN JOURNAL OF LYMPHOLOGY AND RELATED PROBLEMS (EJLRP)

The EJLRP - official organ of the European Group of Lymphology (ESL), Czech Society of Lymphology, Romanian Society of Lymphology, Greek Society of Lymphology, the Latin-Mediterranean Chapter of Lymphology (LMCL), the Società Italiana di Linfangiologia (SIL) covers all fields of Lymphology and aims to present a multidisciplinary approach to diseases of the lymphatic system, with information on the analysis, control and treatments of such diseases.

Topics

The topics include:

- anatomy and anatomopathology
- physiology and physiopathology
- pharmacology
- diagnostic methods (conventional radiology, nuclear medicine, ultrasonography, computed tomography, biopsy, nuclear magnetic resonance)
- therapy (surgery, medicine, radiotherapy, physical)
- oncology (primary lymphatic system diseases, lymphonodal metastatic process)
- immunology
- post-therapeutic complications
- upper and lower limb edemas

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Submitted manuscripts will be published in the form of Editorial, Review article, Original article, Teaching article, Special article, Work in progress, Case Report, Short Communications, Letter to the Editor (in English), Abstract (in English)

They will be subdivided in Clinical and Basic Sciences.

Send manuscripts to:
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Dr. S. MICHELINI

Department of Vascular Rehabilitation
S. Giovanni Battista Hospital
Via L.E. Morselli, 13 - 00148 Rome, Italy
Tel. +39 06 655961 - Fax +39 06 65596235
e-mail: sandro.michelini@fastwebnet.it

The Editor-in-Chief

Prof. Dr. F. BOCCARDO

Department of Surgery, Lymphatic Surgery and Microsurgery
S. Martino Hospital, University of Genoa
Largo R. Benzi, 8 - 16132 Genoa, Italy
Fax 0039010532778 - e-mail: Francesco.boccardo@unige.it

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XXXVII Congress
of the European Society
of Lymphology

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Warsaw (Poland)

3-4 June, 2011

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XXXVII CONGRESS

Warsaw, Poland - 3-4 June, 2011

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37th European Congress of Lymphology

3 and 4 June 2011

Warsaw (Poland)

President of the Congress: **Waldemar L. OLSZEWSKI**

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E-mail: wlo@cmdik.pan.pl, waldemar.l.olszewski@gmail.com

WELCOME

Dear participants,

It's a great honor and privilege to host you in Warsaw at the 37th Congress of the European Society of Lymphology. Our convention will give us the opportunity to get together the most experienced lymphologist from Europe and overseas and exchange views on position of lymphology among other medical disciplines. This still neglected discipline needs impetus, which will be given to her in Warsaw. It will also further revitalize our society.

The knowledge of physiology of the lymphatic system should be expanded. Medical textbooks for student should be enriched by chapters on lymphology. Diagnostic methods should be developed and wider used. Therapy should be based on physiological parameters and not on anecdotal science. Modernization of therapy by its mechanization and home care should improve life of millions of lymphedema patients around the world. Let's make lymphology a medical discipline equal to the others.

President of the ESL Congress

Prof. Waldemar L. Olszewski MD, PhD



	THURSDAY 2 JUNE	FRIDAY 3 JUNE	SATURDAY 4 JUNE
9		WELCOME 9:00-9:15	
10		ANATOMY & PHYSIOLOGY 9:15-10:45	SURGICAL THERAPY I 9:00-10:30
11		COFFEE BREAK	BREAK
12		PATHOLOGY I 11:00-12:30	SURGICAL THERAPY II 10:45-12:30
13		BREAK	
14		PATHOLOGY II 13:15-14:30	LYMPHOLOGY OUTSIDE EUROPE 12:30-13:30
15			
16		BREAK	
		DIAGNOSTICS 14:45-16:00	GENERAL ASSEMBLY 14:00-15:00
16		BREAK	
17		CONSERVATIVE THERAPY 16:15-18:15	
18	EXECUTIVE COMMITTEE MEETING		
19			
		MORNING AND AFTERNOON WORKSHOPS : 1) THUASNE 2) POLISH LYMPHOLOGICAL SOCIETY	

Physiology and Diseases of the Lymphatic System

Annual Workshop of the European Society of Lymphology

Scientific program

H. 09.00 WELCOME by WALDEMAR L. OLSZEWSKI and SANDRO MICHELINI

Friday, 3 rd June 2011	
09,15	Session 1 Anatomy & Physiology

Chairmen O. ELIŠKA and M. OHKUMA

- BREAST - PARASTERNAL AND STERNAL REGION AND LYMPHATICS**
Eliška O., Elišková M.
Department of Anatomy, 1st. Medical Faculty, Charles University, Prague, Czech Rep.
- PHYSIOLOGICAL PARAMETERS FOR EFFECTIVE COMPRESSION THERAPY OF SWOLLEN LOWER LIMBS - SKIN TONOMETRY, TISSUE FLUID PRESSURE AND FLOW**
Olszewski W.L.^{1,2,3}, Zaleska M.¹, Cakala M.¹, Durlík M.^{1,2}
¹Department of Surgical Research & Transplantology, Medical Research Center, Polish Academy of Sciences, Warsaw, Poland; ²Department of Transplantation Surgery, Central Clinical Hospital, Ministry of Internal Affairs, Warsaw, Poland; ³Biocompression, Moonachie, NY, USA
- STUDY OF INTERLEUKINS IN LYMPH COMPOSITION IN POST-SURGICAL LYMPHOCELE AND ITS MODIFICATIONS BY THE TREATMENT**
Michelinì Sandro, Cardone Marco, Failla Alessandro, Moneta Giovanni, Todisco Rachele, Todini Maddalena, Fiorentino Alessandro, Cappellino Francesco
San Giovanni Battista Hospital, ACISMOM, Rome, Italy
- PDGF IN NORMAL VOLUNTEERS AND IN SECONDARY LYMPHEDEMA WITH CHANGE AFTER THE PHYSIOTHERAPY**
H. Hasegawa and M. Ohkuma
Department of Nephrology and Dermatology, Sakai Hospital, Kinki University, School of Medicine, Osaka, Japan
- HUMAN SKIN TISSUE FLUID/LYMPH CYTOKINES AND GROWTH FACTORS - THEIR ROLE IN LYMPHEDEMA SKIN CHANGES**
Zaleska M.¹, Domaszewska-Szostek A., Cakala M.¹, Olszewski W.L.^{1,2}, Durlík M.^{1,2}
¹Department of Surgical Research & Transplantology, Medical Research Center, Polish Academy of Sciences, Warsaw, Poland; ²Dept. of Transplantation Surgery, Central Clinical Hospital, Ministry of Internal Affairs, Warsaw, Poland
- MITOGENIC EFFECT OF HUMAN TISSUE FLUID/LYMPH ON KERATINOCYTE PROLIFERATION**
Anna Domaszewska-Szostek¹, Marzanna Zaleska¹, Waldemar L. Olszewski^{1,2}
¹Department of Surgical Research & Transplantology, Medical Research Center, Polish Academy of Sciences, Warsaw, Poland; ²Dept. of Transplantation Surgery, Central Clinical Hospital, Ministry of Internal Affairs, Warsaw, Poland

Friday, 3 rd June 2011	
11,00	Session 2A Pathology I

Chairmen M. WALD and CH. PAPENDIECK

- THE BIG FOOT SYNDROME WITH ANGIODYSPLASIAS IN PEDIATRICS**
Papendieck C.M., Pozo P., Barbosa L.
Angiopediatria, Buenos Aires, Argentina
- DIFFERENTIAL DIAGNOSIS, TREATMENT AND PREVENTION OF ACUTE AND CHRONIC ERYSIPELOID LYMPHANGITIS**
Campisi Corrado, Boccardo Francesco, Lavagno Rosalia, Campisi Caterina, Accogli Susanna
Unit of Lymphatic Surgery, Unit of Plastic and Reconstructive Surgery, Department of Surgery, San Martino Hospital, University of Genoa, Italy
- AXILLARY WEB SYNDROME**
Martin Wald
Department of Surgery, 2nd Medical Faculty of Charles University, Prague, Czech Republic
- POST-TRAUMATIC LYMPHOEDEMA. A CASE REPORT**
M. Wald, T. Vidim
*Department of Surgery, 2nd Medical Faculty of Charles University, Prague, Czech Republic
Department of Cardiovascular Surgery, 1st Medical Faculty of Charles University, Prague, Czech Republic*
- LYMPHEDEMA OF THE BREAST IN BREAST CANCER PATIENTS FOLLOWING BREAST CONSERVING SURGERY WITH RADIATION THERAPY**
Nele Adriaenssens, Hanne Verbelen, Pierre Lievens, Jan Lamote
Nele Adriaenssens, University Hospital of Brussels; Belgium
- SHOULDER-ARM MORBIDITY IN EARLY BREAST CANCER PATIENTS TREATED WITH TWO DIFFERENT RADIATION TECHNIQUES**
Adriaenssens Nele, M.Sc.¹, Van Parijs Hilde, M.D.², Vinh-Hung Vincent, Ph.D.², Reynders Truus, M.Sc.², De Ridder Mark, Ph.D.², Lievens Pierre, Prof.³, Lamote Jan, Prof., M.D.¹
*¹Breast Clinic, Department of Physical Therapy and Oncological Surgery, UZ Brussel, Laarbeeklaan 101, 1090 Brussels, Belgium;
²Oncology Centre, Department of Radiation therapy, UZ Brussel, Laarbeeklaan 101, 1090 Brussels, Belgium;
³Physical Therapy Department, Vrije Universiteit Brussel, Laarbeeklaan 103, 1090 Brussels, Belgium*

Friday, 3rd June 2011
Session 2B
13,15 Pathology II

Chairmen S. MICHELINI and A. PISSAS

1. **THE POST-ONCOLOGICAL LYMPHEDEMA: OUR EXPERIENCE**
 Sandro Michelini, Marco Cardone, Alessandro Fiorentino, Alessandro Failla, Daniele Puglisi, Maria Rita Fantegrossi
San Giovanni Battista Hospital, ACISMOM, Rome, Italy
2. **CHYLOUS DISORDERS: PHYSIOLOGICAL PRINCIPLES, DIAGNOSTICS AND THERAPEUTIC OPTIONS**
 Campisi Corradino, Campisi Corrado, Lavagno Rosalia, Campisi Caterina, Boccardo Francesco
Unit of Lymphatic Surgery, Unit of Plastic and Reconstructive Surgery, Department of Surgery, San Martino Hospital, University of Genoa, Italy
3. **CLINICAL AND GENETIC STUDY OF ITALIAN FAMILIES WITH PRIMARY LYMPHEDEMA**
 Michelini Sandro¹, Bertelli Matteo², Cardone Marco¹, Cecchin Stefano², Cestari Marina³, Corda Domenico⁴, Leone Alfredo⁵, Mander Antonio⁶, Ricci Maurizio⁷
¹ *San Giovanni Battista Hospital, ACISMOM, Rome, Italy*
² *MAGI non-profit Human Medical Genetics Institute, Rovereto, Italy*
³ *Domus Gratiae Center, Terni, Italy*
⁴ *Polimedica San Lanfranco Center, Pavia, Italy*
⁵ *Vascular Rehabilitative Unit, Carmide Clinical Center, Catania, Italy*
⁶ *Rehabilitative Center Vaclav Vojta, Rome, Italy*
⁷ *Rehabilitative Unit Torrette Hospital, Ancona, Italy*
4. **THE LIPOLYMPHEDEMA: AN UNABILING ILLNESS**
 Sandro Michelini, Marco Cardone, Francesco Cappellino, Giovanni Moneta, Haag O'Agga Marco, Romaldini Fabio
San Giovanni Battista Hospital, ACISMOM, Rome, Italy
5. **AN UNUSUAL CASE OF CYSTIC LYMPHANGIOMA: LEFT SUPRACLAVICULAR IN AN ADULT**
 A. Pissas, H. Chapuis, R. Rubay

Friday, 3rd June 2011
Session 3
14,45 Diagnosis of Lymphedema

Chairmen E. IKER and M. CESTARI

1. **ROLE OF THE LYMPHOSCINTIGRAPHY IN PRIMARY PREVENTION AFTER BREAST CANCER TREATMENT**
 Marina Cestari, MD
Pianeta Linfedema Study Center, Terni, Italy
2. **ROLE OF LYMPHOSCINTIGRAPHY OF LOWER EXTREMITIES IN PATIENTS WITH INCREASED BODY MASS**
 Iker E., Glass E.C.
Lymphedema Center of Santa Monica and Medical Imaging of Southern California, Santa Monica, CA., USA
3. **LYMPHOSCINTIGRAPHY AS A TOOL IN VIZUALIZING PATHWAYS OF LYMPH AND TISSUE FLUID FLOW DURING PNEUMATIC COMPRESSION THERAPY**
 W.L. Olszewski, M. Zaleska, A. Domaszewska, Jarosław Cwikla
¹ *Department of Surgical Research & Transplantology, Medical Research Center, Polish Academy of Sciences, Warsaw, Poland;* ² *Dept. of Transplantation Surgery, Central Clinical Hospital, Ministry of Internal Affairs, Warsaw, Poland*

4. **CREEP OF LYMPHOEDEMOUS TISSUE – RESULTS OF TESTS AND PRELIMINARY POROELASTIC MODELLING**
 M. Galanciak¹, K. Nowak², B. Nowak¹, P. Domanowski³, M. Kaczmarek¹

¹ *Kazimierz Wielki University, Bydgoszcz, Poland*

² *Collegium Medium, Bydgoszcz, Mikołaj Kopernik University, Toruń, Poland*

³ *Univeristy of Technology and Life Sciences in Bydgoszcz, Poland*

5. **MOBILE INFRARED OPTOELECTRONIC VOLUMETRY (PEROMETER®), A STANDARD DIAGNOSTIC TOOL FOR BREAST CANCER RELATED LYMPHEDEMA**
 Adriaenssens Nele, M.Sc.¹, Buyl Ronald, Prof.², Lamote Jan, Prof., M.D.¹, Lievens Pierre, Prof.³
¹ *UZ Brussel, Breast Clinic, Department of Physical Therapy and Oncological Surgery, Laarbeeklaan 101, 1090 Brussels, Belgium;*
² *Vrije Universiteit Brussel, Biostatistics and Medical Informatics Department, Laarbeeklaan 103, 1090 Brussel, Belgium;*
³ *Vrije Universiteit Brussel, Physical Therapy Department, Laarbeeklaan 103, 1090 Brussels, Belgium*

Friday, 3rd June 2011
Session 4
16,15 Conservative Therapy

Chairmen S. MICHELINI and E. IKER

1. **LYMPHOEDEMA IN INDIA**
 Dr S.B. Gogia
New Delhi, India
2. **THE PROPER BANDAGING FOR THE PROPER FINAL GARMENT IN LYMPHOEDEMA PATIENT**
 Michelini Sandro, Moneta Giovanni, Cardone Marco, Failla Alessandro, Cappellino Francesco, Fiorentino Alessandro, Di Filippo Guido*
San Giovanni Battista Hospital, ACISMOM, Rome, Italy
 **ASL Caserta 1, Caserta, Italy*
3. **LYMPHATIC SYSTEM and SYNDROME OF IMMUNOCOMPLEXES - IMMUNOLOGY PERSPECTIVE**
 Loskotová Anna^{1,2,3}, Loskotová Jitka⁴
¹ *Masaryk University in Brno, Clinic of Burns and Reconstructive Surgery, University hospital in Bohunice, Czech Republic*
² *Charles University in Prague, 3rd Faculty of Medicine, Dept. of Preventive Medicine, Czech Republic*
³ *Salve Centre, Clinic of Physiotherapy, Vysoke Myto, Czech Republic*
⁴ *Masaryk University in Brno, Faculty of Law, Dept. of Financial Law, Czech Republic*
4. **COMBINED DECONGESTIVE THERAPY IN GREECE: AN EFFECTIVE TREATMENT OF LYMPHEDEMA**
 E. Dimakakos^{1,3}, J. Kalemikerakis², Z. Vardaki², G. Fouka², G. Antonatos¹, K. Krousianotaki¹, Ei. Lympelopoulou¹, K. Syrigos³
¹ *Lymphology Unit of AngionMedicine, Center of Vascular Diseases, Athens, Greece*
² *TEI of Athens, Greece*
³ *Oncology Unit of 3rd Internal Clinic of the University of Athens School of Sotiria; General Hospital, Athens, Greece*

5. **COMPRESSION THERAPY OF SWOLLEN LOWER LIMBS - TISSUE FLUID HYDRAULICS, CLINICAL EFFECTS**
Marzanna Zaleska¹, Waldemar L. Olszewski^{1,2}, Marta Cakala¹, Pradeep Jain³
¹Dept. of Surgical Research & Transplantation, Medical Research Center
²Polish Academy of Sciences and Central Clinical Hospital, Ministry of Internal Affairs, Warsaw, Poland
³Department of Plastic Surgery, Benares Hindu University, Varanasi, India
6. **FORMATION OF TISSUE FLUID CHANNELS IN LYMPHEDEMATOUS SUBCUTANEOUS TISSUE DURING INTERMITTENT PNEUMATIC COMPRESSION THERAPY**
Olszewski W.L.^{1,2}, Zaleska M.¹, Cakala M.¹, Jain P.³
¹Department of Surgical Research & Transplantation, Medical Research Center, Polish Academy of Sciences, Warsaw, 02-106, Poland
²Central Clinical Hospital, Ministry of Internal Affairs, Warsaw, Poland
³Department of Plastic Surgery, Benares Hindu University, Varanasi, India
7. **EXPERIMENTAL APPROACH OF THE EFFECTS OF MULTIDIRECTIONAL VIBRATIONS (ANDULATIONS) ON THE MICROCIRCULATION**
Pastouret F., Lievens P.
Department of Rehabilitation Research, Vrije Universiteit Brussels, Belgium
8. **PLACE OF VEINOTONICS DRUGS IN LYMPHOLOGY**
A. Hamadé¹, C. Krieger¹, T. Samkharadzé¹, P. Michel², G. Obringer¹, J.C. Stoessel¹, M. Lehn-Hogg¹, H. Metzger¹
¹Vascular Medicine, Emile Muller Hospital, Mulhouse, France
²Cabinet de Phlébologie, Wingen-sur-Moder, France

Morning and afternoon bandaging workshops:
1. THUSANE, POLISH SOCIETY OF LYMPHOLOGY

Saturday, 4th June 2011
Session 5A
09,00 Surgical Therapy I

- Chairmen F. BOCCARDO and R. BAUMEISTER
1. **OUR EXPERIENCE OF MANAGING ADVANCED LYMPHEDEMA OF LOWER EXTREMITIES**
Pradeep Jain, P.P. Dutta, P. Goswami, Amol Patel, Vaibhav Jain
Dept. of Plastic Surgery, Institute of Medical Sciences, Banaras Hindu University, Varanasi, India
2. **ROLE OF MICROSURGERY IN PHLEBOLYMPHOLOGY: PREVENTION AND TREATMENT OF LYMPHATIC COMPLICATIONS IN VENOUS SURGERY**
Boccardo Francesco, Campisi Corrado, Campisi Caterina, Accogli Susanna, Lavagno Rosalia, Campisi Corradino
Unit of Lymphatic Surgery, Unit of Plastic and Reconstructive Surgery, Department of Surgery, San Martino Hospital, University of Genoa, Italy
3. **MICROSURGICAL THERAPY OF LYMPHEDEMA: PHYSIOLOGICAL PRINCIPLES, INDICATIONS AND LONG TERM RESULTS**
Campisi Corradino, Boccardo Francesco, Campisi Corrado, Lavagno Rosalia, Accogli Susanna, Campisi Caterina
Unit of Lymphatic Surgery, Unit of Plastic and Reconstructive Surgery, Department of Surgery, San Martino Hospital, University of Genoa, Italy

4. **MICROSURGICAL LYMPHOVENOUS ANASTOMOSES AFTER 45 YEARS - INDICATIONS, TECHNIQUES AND FOLLOW-UP EVALUATION METHODS**
Waldemar L. Olszewski
Department of Surgical Research & Transplantation, Medical Research Center, Polish Academy of Sciences, Warsaw, Poland. Central Clinical Hospital, Ministry of Internal Affairs, Warsaw, Poland
5. **DIRECT RECONSTRUCTION OF INTERRUPTED LYMPHATIC VESSELS MEETS THE BASIC PRINCIPLES OF LYMPHFLOW**
Baumeister Ruediger G.H.
Former head: Div. of Plastic-, Hand-, Micro- Surgery University of Munich, Campous Grosshadern
Consultant: Chirurgische Klinik München Bogenhausen, Muenchen, Germany
6. **VENOUS BRIDGES AS AN ALTERNATIVE OPTION FOR LYMPHOVENOUS SHUNTS IN PEDIATRICS**
Papendieck C.M., Pozo P., Barbosa L.
Angiopediatria, Buenos Aires, Argentina

Saturday, 4th June 2011
Session 5B
10,45 Surgical Therapy II

- Chairmen C. CAMPISI and H. BRORSON
1. **PREVENTION AND TREATMENT OF LYMPHATIC INJURY IN SURGERY AND TRAUMA**
Boccardo Francesco, Campisi Corrado, Campisi Caterina, Accogli Susanna, Lavagno Rosalia, Campisi Corradino
Unit of Lymphatic Surgery, Unit of Plastic and Reconstructive Surgery, Department of Surgery, San Martino Hospital, University of Genoa, Italy
2. **SEVENTEEN YEARS' EXPERIENCE OF COMPLETE REDUCTION OF ARM LYMPHEDEMA FOLLOWING BREAST CANCER**
Håkan Brorson MD, PhD; Carolin Freccero, MD, PhD; Karin Ohlin OTR; Barbro Svensson PT
Department of Clinical Sciences Malmö, Lund University, Plastic and Reconstructive Surgery (Lymphedema Unit), Skåne University Hospital, Malmö, Sweden
3. **LIPOSUCTION NORMALIZES ELEPHANTIASIS OF THE LEG - A PROSPECTIVE STUDY WITH AN EIGHT-YEAR FOLLOW-UP**
Håkan Brorson MD, PhD; Carolin Freccero, MD, PhD; Karin Ohlin OTR; Barbro Svensson
Department of Clinical Sciences Malmö, Lund University, Plastic and Reconstructive Surgery (Lymphedema Unit), Skåne University Hospital, Malmö, Sweden
4. **SURGICAL DEBULKING PROCEDURES IN VERY ADVANCED LYMPHEDEMA OF LOWER LIMBS**
Waldemar L. Olszewski^{1,2}, Pradeep Jain³, Joseph Victor³, M. Durlik^{1,2}
¹Department of Surgical Research & Transplantation, Medical Research Center, Polish Academy of Sciences, Warsaw, Poland; ²Central Clinical Hospital, Ministry of Internal Affairs, Warsaw, Poland; ³Indian Lymphology Centers in Varanasi and Thanjavur, India
5. **SURGERY OF MALE GENITAL LYMPHEDEMA**
W.L.Olszewski^{1,2}, S.Gogia³, P. Jain³, M. Zaleska^{1,2}, M. Durlik²
¹Department of Surgical Research & Transplantation, Medical Research Center, Polish Academy of Sciences, Warsaw, Poland; ²Central Clinical Hospital, Ministry of Internal Affairs, Warsaw, Poland; ³Indian Lymphology Centers in Varanasi and Thanjavur, India

6. **INTEREST OF SELECTIVE LIPOSUCTION AFTER LYMPHO
NODES TRANSPLANTATION IN LIMBS LYMPHEDEMAS**
J.P. Brun, C. Becker, G. Piquilloud
Lymphology Unit Georges Bizet, Paris, France
7. **THERAPEUTIC CONSEQUENCES OF SUPRA CLAVICULAR
OUTLET SYNDROME IN UPPER LIMB LYMPHEDEMA**
J.P. Brun
Lymphology Unit Georges Bizet, Paris, France

	Saturday, 4th June 2011
	Session 6
13,00	Lymphology outside Europe
<i>Discussers</i>	P. JAIN, S. GOGIA (<i>INDIA</i>), M. OHKUMA (<i>JAPAN</i>), CH. PAPENDIECK (<i>ARGENTINA</i>)
14,00	GENERAL ASSEMBLY
	INDUSTRIAL EXHIBITION

Friday 3rd June 2011 - H. 09,15 - Session 1

Anatomy & Physiology

1. BREAST - PARASTERNAL AND STERNAL REGION AND LYMPHATICS

ELIŠKA O., ELIŠKOVÁ M.

Department of Anatomy, 1st Medical Faculty, Charles University, Prague, Czech Rep.

The study was performed on 19 female cadavers with a mean age of 65 years, within 12 hours of decease from internal diseases with a negative history for malignancies. In two additional cadavers with metastasis after breast surgery for cancer, the same procedure as in cadavers without malignancy was carried out. After local warming of body to a temperature of 37 degrees Celsius, gradually and slowly patent blue dye and Gerota Mass – Berlin blau (Ferrum Ferroxyanide in oil) was administered intradermally and subcutaneously in the base of medial breast quadrants. The additional injection of the dye was injected cutaneously and subcutaneously on both sides of the sternum- parasternally in the level of the second to fifth intercostal space. Anatomical findings were compared with clinical ones before and after breast surgery and collateral anastomoses in region of the scars after breast ablation were determined

Results

From the region of medial margin breast as well as from parasternal sternal region in the most cases the dye spread through lymphatics predominantly to ipsilaterally axillary region. Simultaneously from same parasternal injection the dye spread through lymphatics to contralateral parasternal lymphatics and from them went on to contralateral axillary lymphatics. The anastomoses between internal mammary lymphatics and parasternal region were found too. The significance of these connections is discussed.

2. PHYSIOLOGICAL PARAMETERS FOR EFFECTIVE COMPRESSION THERAPY OF SWOLLEN LOWER LIMBS - SKIN TONOMETRY, TISSUE FLUID PRESSURE AND FLOW

OLSZEWSKI W.L.^{1,2,3}, ZALESKA M.¹, CAKALA M.¹, DURLIK M.^{1,2}

¹ Department of Surgical Research & Transplantology, Medical Research Center, Polish Academy of Sciences, Warsaw, Poland

² Department of Transplantation Surgery, Central Clinical Hospital, Ministry of Internal Affairs, Warsaw, Poland

³ Biocompression, Moonachie, NY, USA

Contact details: Prof. Waldemar L. Olszewski, Department of Surgical Research & Transplantology, Medical Research Center, Polish Academy of Sciences, 02-106 Warsaw, Poland, 5 Pawinskiego Str., phone +48 22 6685316, fax +48 22 6685334, e-mail: wlo@cmdik.pan.pl

Introduction. Removal of excess of tissue fluid (TF) from injured tissue is indispensable for slowing down the progress of lymphedema with hyperkeratosis, fibrosis and recurrent infections. **Aim.** Mechanical compression is at present the most effective conservative method enabling tissue fluid to overcome tissue resistance and flow to the non-swollen regions. **Methods.** Intermittent compression. We studied hydraulics of tissue fluid in swollen lower limbs (lymphedema, venous ulcers, posttraumatic hematoma) using intermittent pneumatic compression. Twenty five patients with lymphedema stage II/III of lower limbs were investigated. An 8-chamber sequential pneumatic device was used for compression therapy. The parameters of compression were: inflation pressure 120-100mmHg, sequentially from chamber 1 to 8, inflation time of each chamber 50", daily for 1 h and for a period of 12 months. Skin tonometry was done in each patient before and after each compression cycle. TF pressure was measured in the calf and thigh with use of subcutaneously placed pressure sensor. Changes in circumference of compressed limb were measured continuously using a plethysmograph. Flow was calculated from changes in circumference. **Results.** TF pressure generated by massage was dependent on skin rigidity. In advanced cases of lymphedema, pressures in the sleeve had to be raised as high as 150mmHg to obtain the transmural (TF) pressure of 40 mmHg. This was the minimum pressure necessary for TF flow. **Tonometry.** Tonometer piston was pressed against swollen tissue to a depth of 10mm and applied force was read off on the scale. Simultaneously, TF pressure was measured under tonometer. Applied force plotted against pressure gave hints how high massage pressure would be required to move TF. Tonometer force of 1000g/sq.cm generated average TF pressures of 30mmHg, of 2000g/sq.cm 50mmHg, above 2000g/sq.cm 70mmHg. Massage pressures had to be set accordingly. Strain gauge applied around calf showed increase in circumferences depending on the applied sleeve pressures. TF flow calculated from circumference increase ranged from 1 to 20 ml per inflation cycle. **Conclusions.** Pneumatic compression in order to be effective should be based on prior skin tonometry and TF pressure/flow measurements.

3. STUDY OF INTERLEUKINS IN LYMPH COMPOSITION IN POST-SURGICAL LYMPHOCELE AND ITS MODIFICATIONS BY THE TREATMENT

MICHELINI SANDRO, CARDONE MARCO, FAILLA ALESSANDRO, MONETA GIOVANNI, TODISCO RACHELE, TODINI MADDALENA, FIORENTINO ALESSANDRO, CAPPELLINO FRANCESCO

San Giovanni Battista Hospital - ACISMOM - Via L.E. Morselli, 8 - 00148 Rome (Italy). s.michelini@acismom.it

The post-operative lymphocele can be considered a source of informations about the lymph composition. The lymphocele is lasting (from 2 weeks to more of 1 year) and is supplied by the lymph collectors coming from the natural corresponding anatomical area. The lymph carried by the collectors is the same produced by the tissues and collected by the initial lymphatic vessels at microvasculotissutal level.

Studying the behavior of interleukins in the lymph produced in the postoperative period in both subjects with Secondary lymphedema and in subjects with non edematous limb.

The authors studied 18 patients undergoing lymphadenectomy at the root of the limb for cancer with secondary lymphocele. In particular were researched at the time 0, after 1 week (T1), after 2 weeks (T2) and after 3 weeks (T3) the following components of the lymph (of subjects with and without associated lymphedema) :

- Interleukin 1
- Interleukin 6
- TNF α

The Authors observed :

A medium concentration so composed : Interleukin 1 (with lymphoedema 89 pg/ml and without 65 pg/ml), Interleukin 6 (with lymphoedema 78pg/ml and without 46 pg/ml), TNF α (with 31 pg/ml and without 22 pg/ml). After three weeks of combined physical treatment the most important modifications were the medium decrease of the Interleukin 1 (21 and 12) and of Interleukin 6 (19 and 10). There weren't significant modifications of the concentrations of TNF α .

This preliminary study demonstrates that the lymph concentration of interleukin 1 and Interleukin 6 is characterized by low concentration in health limb than in the affected limbs. In particular the precox tissular fibrosis is proportional to the Interleukin 1 initial concentration. The TNF α is constant and not significant

The composition can change in function of the pharmacological and/or physical treatment.

4. PDGF IN NORMAL VOLUNTEERS AND IN SECONDARY LYMPHEDEMA WITH CHANGE AFTER THE PHYSIOTHERTAPY

H. HASEGAWA AND M. OHKUMA*

*Department of Nephrology and *Dermatology, Sakai Hospital, Kinki University, School of Medicine, Osaka, Japan*

Background. The authors have investigated lymphangiogenic cytokines; VEGFR-3 is expressed strong after the physiotherapy by magnetic fields, vibration and hyperthermia. However HGF, insulin-like growth factor-I are not contributory. PDGF(platelet derived growth factor) has been reported to the contrary in the 32nd international congress of lymphology,2007 which has been reinvestigated and reevaluated. That is why this PDGF is being reported again with the comparison with data of the normal volunteers.

Materials and Methods. Each 5 patients are examined for PDGF-BB by means of ELISA in the normal volunteers and secondary lymphedema with the change after the physiotherapy by magnetic fields, vibrationa and hyperthermia..

Result. PDGF-BB of the secondary lymphedema patients are low and become eraised to be normal after the physiotherapy. This low value is not different from that of the normal volunteers.

Discussion. W. Olsweski insists the lymphatics of the old patients of secondary lymphedema do not respond well to lymphangiogenic cytokines. We should evaluate this topic. But even though it is true, we may utilize this positive feed back of the cytikines for the lymphedema treatment with combination of some other treatment. Lymphorrhhea has been stopped by the physiotherapy(Ohkuma,2003). This may have something to do with this PDGF change. The same investigation for the primary lymphedema is being done to explain and rule out the problem.

Conclusion. PDGF-BB which is normal in volunteers become high after physiotherapy by magnetic fields, vibration and hyperthermia.

5. HUMAN SKIN TISSUE FLUID/LYMPH CYTOKINES AND GROWTH FACTORS - THEIR ROLE IN LYMPHEDEMA SKIN CHANGES

ZALESKA M.¹, DOMASZEWSKA-SZOSTEK A.¹, CAKALA M.¹, OLSZEWSKI W.L.^{1,2}, DURLIK M.^{1,2}

¹ Department of Surgical Research & Transplantology, Medical Research Center, Polish Academy of Sciences, Warsaw, Poland

² Department of Transplantation Surgery, Central Clinical Hospital, Ministry of Internal Affairs, Warsaw, Poland

Contact details: Prof. Waldemar L. Olszewski, Department of Surgical Research & Transplantology, Medical Research Center, Polish Academy of Sciences, 02-106 Warsaw, Poland, 5 Pawinskiego Str., phone +48 22 6685316, fax +48 22 6685334, e-mail: wlo@cmdik.pan.pl

Objective. Tissue fluid/lymph (TF) contains cytokines, chemokines, growth factors originating from blood, parenchymatous and infiltrating cells. These proteins regulate immune processes but also influence cellular events in skin and lymph nodes draining lymphedematous inflammatory tissues. Stimulation of keratinocytes and fibroblasts results in hyperkeratosis and fibrosis of tissues. Cytokines regulate this process. Aim. To measure concentration of pro- and anti-inflammatory cytokines and chemokines in human lower limb skin tissue fluid/lymph in normal subjects, patients with obstructive lymphedema without and with bacterial dermatitis and their effect on keratinocytes.

Methods. TF was collected from lymphatics in lower leg from cannulated lymphatics or puncture of the superficial dilated plezus. Cytokines measured with ELISA.

Results. 1) pro- and anti-inflammatory (IL1 β , TNF α , IL1R α , MIP1 α , MCP1, IL6, IL12, TGF β), 2) regulating epidermal and dermal cellular (KGF, MMP9, TIMP 1 and 2, PDGF BB) and 3) lymphatic structure (VEGF, VEGF C, CCL21 and 27) were measured in patients: A) without any dermal conditions (N), B) lymphedema without dermatitis (LD), C) lymphedema complicated by dermatitis (L). 1) In all patients groups it was higher than in N. IL10 and 12 levels were low. 2) KGF, MMP9 and TIMPS concentration was significantly higher than in N in all groups, 3) VEGFs and CCL21 and 27 were much elevated in lymphedema.

Conclusions. Concentration of cytokines in tissue fluid/lymph varies depending on the type of processes in the skin. Most of cyto- and chemokines are produced locally and their level exceeds that of serum. Measuring humoral factors in TF gives insight into tissue events that is not possible with measuring serum concentrations.

6. MITOGENIC EFFECT OF HUMAN TISSUE FLUID/ LYMPH ON KERATINOCYTE PROLIFERATION

ANNA DOMASZEWSKA-SZOSTEK ¹, MARZANNA ZALESKA ¹, WALDEMAR L. OLSZEWSKI ^{1,2}

¹ Department of Surgical Research & Transplantology, Medical Research Center, Polish Academy of Sciences, Warsaw, Poland

² Dept. of Transplantation Surgery, Central Clinical Hospital, Ministry of Internal Affairs, Warsaw, Poland

Background. Cultured keratinocytes (KC) are needed for covering large burn wounds and ulcers. They can be cultured in artificial media, however, the yield is always low and viability is limited. In our previous studies we found that human skin tissue fluid and lymph (TF/L) contain high levels of growth factors and cytokines. The aim was to study the effect of human TF/L containing IL-1 β , IL-6, TNF- α , KGF, TGF- β on cultured human KC of human lower extremity skin and to show which cytokines and growth factors of human skin TF/L have influence on KC: proliferation, differentiation and expression of markers characteristic for epidermal stem cells

Material and methods. KC were isolated from lower limb skin and were cultured for 1 to 14 days in TF/L and culture in standard medium served as a control. Neutralization of IL-1 β , IL-6, TNF- α , KGF, TGF- β in TF/L and blocking their receptors on KC helped to estimate which cytokine could stimulated KC proliferation and differentiation.

Results. KC cultured in TF/L showed higher percentage of dividing and cells from basal layer as well as lower percentage of differentiated cells from upper layers vs control. Higher percentage of p63 (48 vs 8), CD29 (52.4 vs 41,4), Ki67 (57 vs 23,8), PCNA (63 vs 38), CK6 (15,5 vs 4,4), CK17 (10,6 vs 5,5), CK16 (26,4 vs 15,3) and decrease in percentage of CK 10 (52 vs 77,5), filaggrin (19,6 vs 48,5) and involucrin (18,8 vs 45,3) positive KC was observed vs control. Neutralization of IL-1 β , IL-6, TNF- α , KGF and blocking their receptors on KC caused decrease in percentage of mitotic cells. Quantitative growth of KC revealed higher proliferative ratio after KC culture in TF/L vs control. Neutralization of selected cytokines and growth factors except TGF- β revealed lower total number of KC.

Conclusion. The investigated cytokines have a stimulating effect on proliferation of basal KC but not on their differentiation.

Pathology I

1. THE BIG FOOT SYNDROME WITH ANGIODYSPLASIAS IN PEDIATRICS

PAPENDIECK C.M., POZO P., BARBOSA L.

Angiopediatria, Buenos Aires, Argentina

The feet dysplasia with overgrowth, that means hypertrophy – because it involves the bones – in the context of an angiodysplasia, has a very important familiar, and and psychosocial impact, and on the patient, when acquiring self awareness, and a transcendental significance. A set of Syndromes and Diseases are the result and cause of this problem, and has as common ground the increase of growth during the development of the child, as long as it is compatible with life. It is necessary to recognize the vascular anomalies, dysplasias and dysfunctions, on the foot or any part of the body, identifying possible Syndromes, to reduce its significance attempting similar feet, keeping normal functions. If the problem is unilateral, the healthy foot is a model, if is bilateral, it is important to achieve similar podal measures, in volume and function, beyond the appearance. A stable foot is mandatory, without symptoms. Malignancy must be discarded, also, the risk of complications. If this cannot be achieved, we do not take the initiative. The amputation is the last resort. First step is the treatment of the vascular anomalies. Then, the cuneiform resection of the foot, in one to three steps, in the context of others aspects of treatment, eg: the venous banding, the epiphysiodesis, treatments of the venous hypertension, embolization of multiple AV shunts, debulking of tumors, unique or sequentially and the treatment of pseudo hypertrophic aspects, like Primary Lymphedema. As a summary, we include in this consideration the Klippel Trenaunay Servelle and Proteus Syndrome, and also, the Cobb Syndrome, the F.P Weber and Klippel Trenaunay Weber Syndromes, some Neurofibromatosis like the plexiform N., the Lipoblastomas and related diseases. The Maffucci and Gorham Stout Haferkamp S. cannot be considered for this options. These proposals are possible, and it is worthy, even when it does not satisfy in all the aspects.

2. DIFFERENTIAL DIAGNOSIS, TREATMENT AND PREVENTION OF ACUTE AND CHRONIC ERYSIPELOID LYMPHANGITIS

CAMPISI CORRADO, BOCCARDO FRANCESCO, LAVAGNO ROSALIA, CAMPISI CATERINA, ACCOGLI SUSANNA, CAMPISI CORRADINO

Unit of Lymphatic Surgery, Unit of Plastic and Reconstructive Surgery, Department of Surgery, San Martino Hospital, University of Genoa, Italy

Adequate diagnosis, treatment and prevention of both acute and chronic erysipeloid lymphangitis are crucial to avoid severe complications that, in some cases, can lead to septic shock and multiorgan failure (MOF). It is possible to clearly distinguish between two types of lymphangitis: the truncular and the properly called erysipeloid. Concerning the etiology, the most frequent clinical finding is the infectious lymphangitis associated to Streptococcus (in particular *Streptococcus Beta-hemolytic Group A*), *Staphylococcus aureus*, *Escherichia coli* and pneumococcal infections. However, it is not rare to evaluate post-traumatic lymphangitis or lymphangitis correlated to systemic inflammatory diseases, such as rheumatic ones. Secondary to infection, the damage of lymphatic collectors and lymph nodes establishes a progressive lymphatic impairment.

Differential diagnosis should be widely studied, focusing on bacterial infections with specific skin involvement (*Staphylococcus*, *Pasteurella* and *Haemophilus influenzae*), phlebitis and superficial thrombophlebitis, diffuse cellulitis or phlegmon, necrotizing fasciitis and compartment syndrome. Diagnostic appropriate evaluation, such as ultrasonography, is extremely helpful to recognize both venous and lymphatic-lymph nodal structures and their pathologic imaging deviation from normal. Blood samples can show leucocytosis and orient towards an eventual systemic involvement.

Following an early and correct diagnosis, treatment of acute lymphangitis initially consists in wide spectrum antibiotic therapy, then focused on antibiogram. Drugs mainly used are the association of Amoxicillin and Clavulanic Acid, Macrolides and Cephalosporins. Prophylaxis of recurrent lymphangitic attacks is performed with long-acting penicillin (1,200,000 units) every 15-20 days for 1-2 years in consideration of every single case. In the acute phase cortisone can be useful, while NSAIDs could induce Steven-Johnson or Lyell syndromes. Multilayer bandages with appropriate topical application of antibiotics (in particular gentamicin), cortisone and zinc oxide can be an extremely important tool in association with the systemic antibiotic regimen.

Lymphatic surgery and, especially, microsurgery have to be taken in consideration to establish an accurate prevention (primary, secondary or tertiary) in patients who present high risk of lymphangitis occurrence, based both on clinical and diagnostic imaging (ultrasound, lymphoscintigraphy) findings.

3. AXILLARY WEB SYNDROME

MARTIN WALD

Department of Surgery, 2nd Medical Faculty of Charles University, Prague, Czech Republic

Introduction

High pressure (overload) in a lymph vessel caused by the restriction or closure of its lumen peripheral to the scar after axillar dissection is called WEB syndrome. This is not a very frequent complication of breast cancer surgery but is a frequent cause of unsuccessful physiotherapy of the shoulder joint after surgical intervention in the axilla. Moreover, it may imitate tennis elbow and/or carpal tunnel syndrome. Overload may also be found in the chest and epigastric region distal to the mastectomy scar.

Methods

During clinical examination, a limited range of shoulder joint motion and horizontal and/or limited hyperextension of the elbow are found. The patient complains about pain on pull extending from the axilla down along the inner side of the arm to the cubitus and on the anterior forearm to the wrist and fingers. Palpation discloses a painful "cord" bridging axillar and/or elbow pit. Usually, the same painful cord is also found on the arm and forearm. Lymphoscintigraphy shows an isolated congestion in the lymph vessel, but without radionuclide retention in soft tissues.

Results

A total of 119 patients were followed up for 7-11 years after breast cancer surgery with adjuvant oncological therapy. WEB syndrome was found in five patients (4.2%); in one patient it appeared nine years after surgery. It was more often diagnosed in the patients who developed axillary seroma with one puncture at least. No other causal relationship was demonstrated. All five WEB syndrome patients received oral proteolytic enzyme therapy and some were treated with very gentle manual lymphodrainage of the upper extremity. In three the WEB syndrome resolved completely. One patient developed latent lymphoedema and one suffered from reversible lymphoedema of the upper extremity. WEB syndrome was associated with axillary lymphoedema in two cases, with breast lymphoedema in one and with breast scar tissue lymphoedema in another after breast preserving surgery and radical mastectomy, respectively.

Conclusion

If physiotherapy for WEB syndrome after breast cancer surgery is not successful or if severe problems in the ipsilateral arm persist, the author recommends to focus on an overload of the lymph vessels as a possible cause. If this is proved, oral administration of proteolytic enzymes and very gentle manual lymphodrainage achieve very good results within 6-8 weeks, and shoulder joint physiotherapy can then be terminated.

The author's own experience suggests that WEB syndrome is not associated with axillary dissection in breast cancer surgery only, but it often occurs also in patients undergoing surgery for benign lesions of the axilla (e.g. mamma accessoria axillae).

4. POST-TRAUMATIC LYMPHOEDEMA. A CASE REPORT

M. WALD, T. VIDIM

Department of Surgery, 2nd Medical Faculty of Charles University, Prague, Czech Republic

Department of Cardiovascular Surgery, 1st Medical Faculty of Charles University, Prague, Czech Republic

The authors report the case-history of a patient with post-traumatic lymphoedema of the lower extremity (traffic accident) due to a cicatrised traumatic laceration at the medial part of the thigh.

During wound healing, a lymphatic fistula developed and persisted. After the wound had healed, lymphoedema of the lower extremity gradually developed and was complicated by deep vein thrombosis and erysipelas. Lymphoscintigraphy demonstrated insufficiency of the lymphatic system.

Based on the findings of Doppler sonography of the deep venous system, a decision was made to restore lymphatic function of the extremity by lymphovenous anastomosis.

Surgery revealed the lymph collectors completely enclosed in a cicatrice. Therefore, a branch of the great saphenous vein was dissected and two of the lymph collectors were anastomosed to it. Five months after surgery the patient was without subjective problems.

5. LYMPHEDEMA OF THE BREAST IN BREAST CANCER PATIENTS FOLLOWING BREAST CONSERVING SURGERY WITH RADIATION THERAPY

NELE ADRIAENSSENS, HANNE VERBELEN, PIERRE LIEVENS, JAN LAMOTE

Nele Adriaenssens, University Hospital of Brussels, Belgium

Background. The National Institutes of Health Consensus Development Conference on Treatment of Early-Stage Breast Cancer indicated, in 1990, that breast conserving surgery with radiation therapy (RT) is the primary therapy for the majority of women with early stage breast cancer. It is preferable to total mastectomy, because it provides survival equivalence while preserving the breast, but several patients develop lymphedema in the operated breast (BE).

Objective. The main objective of the study is to determine the incidence and degree of BE in female breast cancer patients following breast conserving surgery with RT, less than five years post surgery. Determination of risk factors and influence on quality of life are secondary objectives.

Methods. Subjective symptoms of the operated breast, like swelling, redness, peau d'orange and sensibility disorders have been scored on a scale between 0 (symptom not present) and 10 (symptom is intolerable). The EORTC QLQ-BR23 questionnaire has been completed to assess quality of life.

Results. In the 131 included patients, the incidence of BE is 75.6 %, but the mean degree of BE is only 13.8%. There is a significant negative correlation ($p < 0.05$) between the degree of BE and the time since surgery, and a significant positive correlation ($p < 0.05$) between the degree of BE and BMI. No relation is found between the degree of BE and axillary dissection, location of the tumor, preoperative bra cup size or hand dominance.

There is a significant negative correlation ($p < 0.001$) between the degree of BE and body image/future perspective. A significant positive correlation ($p < 0.001$) is found between the degree of BE and side effects of systemic therapy/breast symptoms/arm symptoms/upset with hair loss ($p = 0.019$).

Conclusion. Despite the benefits of breast conserving surgery, BE is a common complication, negatively influencing quality of life.

6. SHOULDER-ARM MORBIDITY IN EARLY BREAST CANCER PATIENTS TREATED WITH TWO DIFFERENT RADIATION TECHNIQUES

ADRIAENSSENS NELE, M.SC.¹, VAN PARIJS HILDE, M.D.², VINH-HUNG VINCENT, PH.D.², REYNDERS TRUUS, M.SC.², DE RIDDER MARK, PH.D.², LIEVENS PIERRE, PROF.³, LAMOTE JAN, PROF., M.D.¹

¹ Breast Clinic, Department of Physical Therapy and Oncological Surgery, UZ Brussel, Laarbeeklaan 101, 1090 Brussels, Belgium

² Oncology Centre, Department of Radiation therapy, UZ Brussel, Laarbeeklaan 101, 1090 Brussels, Belgium

³ Physical Therapy Department, Vrije Universiteit Brussel, Laarbeeklaan 103, 1090 Brussels, Belgium

Background. Adjuvant radiation therapy (RT) after breast cancer surgery, especially to the axilla, is a risk factor for the development of shoulder-arm morbidity, but it reduces the risk of local recurrence by approximately 33% and increases survival rates. With the introduction of modern radiation technologies, long term irradiation sequelae have decreased.

Hypofractionation shortens the treatment schedule and is an acceptable alternative to the conventional RT in terms of curation.

TomoTherapy[®] lowers the delivered irradiation dose to vital organs.

Minor changes in fractionation and dose distribution are associated with a large variation in the risk of developing shoulder-arm morbidity. Since hypofractionation delivers a bigger size of dose per fraction, a higher incidence of shoulder-arm morbidity could be expected.

Objectives. The main objective is to determine whether the incidence of shoulder-arm morbidity in early breast cancer patients treated with hypofractionated RT with TomoTherapy[®] is higher than in patients treated with conventional post-surgery RT.

Methods. Breast Cancer Related Lymphedema of the arm (BCRL), shoulder mobility and scapula positioning have been evaluated before the intervention and one to three months after finishing the intervention.

Circumferential tape measurements have been performed to diagnose BCRL, through the ≥ 2 cm and $\geq 10\%$ diagnostic criteria, together with self-reported subjective BCRL symptoms. Shoulder mobility has been assessed by a goniometer and scapula positioning has been determined by inspection, palpation and the lateral scapular slide test.

Results. The principal results of 93 pts show that there is no significant difference ($p < .05$) in BCRL incidence, shoulder mobility impairment and altered scapula positioning between the control and the intervention group, before and after the intervention.

Conclusions. Hypofractionated RT with TomoTherapy[®] does not cause higher BCRL incidence, impaired shoulder mobility and altered scapula positioning compared with conventional post-surgery RT, one to three months after finishing the RT.

Pathology II

1. THE POST-ONCOLOGICAL LYMPHEDEMA: OUR EXPERIENCE

SANDRO MICHELINI, MARCO CARDONE, ALESSANDRO FIORENTINO, ALESSANDRO FAILLA, DANIELE PUGLISI, MARIA RITA FANTEGROSSI.

San Giovanni Battista Hospital, ACISMOM, Rome, Italy

Secondary lymphedema is a problem in the problem. From the psychological point of view the disease constantly reminds the noxious stimuli that caused it, from physical point of view reduces the "function" of the subject in a manner proportional to clinical (as demonstrated by the study of the International Classification of Functioning). We studied 195 patients with secondary lymphedema (121 females and 74 males aged between 28 and 81 years). All subjects were studied with ICF framework and at the end of initial treatment and were treated with: Manual lymphatic drainage, ultrasound and/or shock waves in the fibrotic areas, anelastic multi-layered bandaging of the affected limbs and segmental motor rehabilitation and occupational therapy and psychological support, as indicated. Before taking charge of the patient status of cancer was found (no more than 5 years of clinical onset), using markers and eventual instrumental studies.

8 recurrences were detected not identified in the last previous cancer control (4.1%). Patients after treatment showed regression of the tissue texture and volume of limbs with good average recovery of muscle tone-tropism and joint function. They were then placed in a protocol of regular clinical, laboratory and instrumental monitoring that allowed the preservation of the clinical results over time.

2. CHYLOUS DISORDERS: PHYSIOLOGICAL PRINCIPLES, DIAGNOSTICS AND THERAPEUTIC OPTIONS

CAMPISI CORRADINO, CAMPISI CORRADO, LAVAGNO ROSALIA, CAMPISI CATERINA, BOCCARDO FRANCESCO

Unit of Lymphatic Surgery, Unit of Plastic and Reconstructive Surgery, Department of Surgery, San Martino Hospital, University of Genoa, Italy

Chylous disorders can be congenital (lymphangectasia with chylous reflux) or acquired after surgery, tumor or trauma. Diagnostics includes mainly lymphangio-MR and lymphangio-TC which allow to confirm the diagnosis, localize the dilated retroperitoneal lymphatics and frequently confirm the sites of the chylous leak.

Therapeutic options are different according to various clinical patterns and include above all excision of dysplastic tissue, ligation and sclerotherapy of chylous vessels, chylous-venous anastomoses, and the use of biological glue.

In most cases it is not possible to treat completely the primary pathology but only what the pathology causes: chylous ascites, chylothorax, chyluria, chylorrhoea, chyledema, protein-losing enteropathy, etc.

Authors report their clinical experience in treating chylous dysfunctions underlying diagnostic investigations and therapeutic procedures.

3. CLINICAL AND GENETIC STUDY OF ITALIAN FAMILIES WITH PRIMARY LYMPHEDEMA

MICHELINI SANDRO¹, BERTELLI MATTEO², CARDONE MARCO¹, CECCHIN STEFANO², CESTARI MARINA³, CORDA DOMENICO⁴, LEONE ALFREDO⁵, MANDER ANTONIO⁶, RICCI MAURIZIO⁷

¹ *San Giovanni Battista Hospital, ACISMOM, Rome, Italy* ² *MAGI non-profit Human Medical Genetics Institute, Rovereto, Italy*

³ *Domus Gratiae Center, Terni, Italy* ⁴ *Polimedica San Lanfranco Center, Pavia, Italy* ⁵ *Vascular Rehabilitative Unit, Carmide Clinical Center, Catania, Italy*

⁶ *Rehabilitative Center Vaclav Vojta, Rome, Italy* ⁷ *Rehabilitative Unit Torrette Hospital, Ancona, Italy*

Primary Lymphedema usually arises at puberty (but in some cases at birth or later) and may be associated with distichiasis (double row of eyelashes). This syndrome may be transmitted as autosomal dominant with variable penetrance. The genes involved are mainly that coding for the transcription factor FOXC2 and that coding for receptor 3 of vascular endothelial growth factor VEGFR3 (also called FLT4). To conduct a clinical study in patients from 11 Italian selected families in order to analyse the genotype-phenotype correlation and shed light on prevalence of hereditary lymphedemae associated with FOXC2 and VEGFR3 mutations.

Patients were selected by a network of medical specialists in Lymphology located in 11 Italian regions. The diagnostic criteria considered in this study include assessment of Lymphedema by Lymphoscintigraphy, exclusion of secondary causes, enrolment of patients whose family had at least 2 cases of Lymphedema and disease onset less than 25 years.

Genetic analysis was carried out after obtaining informed consent. Test involved the extraction of DNA by Salting-out from 100 blood samples (1ml for each) which was followed by PCR amplification of the entire coding region and thus sequencing.

Genetic screening is still ongoing but a novel mutation (p.Ile926Thr), a mutation already described in literature (Gly854Ser) and several changes in intron sequence (c. 3686+83 ins G, c. 3001+80±81 ins TAGGGTAACC) not yet published were detected.

To our knowledge, this is the first Italian study in which FOXC2 and VEGFR3 mutations were sought among a wide range of clinically selected patients with Primary Lymphedema. The results achieved so far show evidence of novel mutations and sequence variations in intronic regions. Compared to the American series, our show a significantly lower rate of mutation, suggesting the existence of a new gene playing a major role in the etiology of primary Lymphedema in Italian Patients.

4. THE LIPOLYPHEDEMA: AN UNABILING ILLNESS

SANDRO MICHELINI, MARCO CARDONE, FRANCESCO CAPPELLINO, GIOVANNI MONETA, HAAG O'AGGA MARCO, ROMALDINI FABIO
San Giovanni Battista Hospital, ACISMOM, Rome, Italy

Little sticky oedema, pain and tenderness, easy to hematoma formation, poor response to diet and physical exercise, and in clinical stage III, an important reduction of the individual functions in addition to serious psychological repercussions, this is the clinical picture of lipoedema that affects only women and that complicates advanced stages of the disease with lymphoedema. The Authors studied 49 patients with lipoedema (aged between 18 and 74 years) in the three clinical stages.

The ICF framework showed an impairment of the ability of people proportional to the clinical stage of evolution and, in the third stage, higher average values in the qualifiers of the four domains that were related to lower limbs (structures and functions) and performances to personal and relational (domain D) and the need for facilitators (domain E). The patients were treated with physical decongestive treatment (manual lymph drainage, multilayered bandaging, shock waves and kinesiology involving the muscles of the lower limbs) and in 16 cases before and after surgical treatment for the reduction of body fat with liposuction.

At the end of treatment was prescribed the final garment with elastic compression of between 25 and 40 mm Hg depending on the tolerance shown by the interest in the band during the intensive treatment. The disease is little known to underestimate its effect on the "functioning" of the individual and global, for this, taken over by professionals not specifically relevant in tackling the problem.

5. AN UNUSUAL CASE OF CYSTIC LYMPHANGIOMA: LEFT SUPRACLAVICULAR IN AN ADULT

A. PISSAS¹, H. CHAPUIS², R. RUBAY³

¹ Faculty of Medicine of Montpellier; ² Department of General and Lymphatic Surgery, Bagnols sur Ceze; ³ Department of Anatomopathology of Hospital Center of Nimes, France

The authors present an unusual case of cystic lymphangioma located in the left supraclavicular region, in an adult caucasian man of 46 years old. The tumor appeared two years ago and a diagnosis of simple lipoma was done. But the swelling became more and more uncomfortable. The consultation with the surgeon and with an ultrasonographic examination led to the same diagnosis: lipoma! Nevertheless an MRI examination was decided. This one evoked the cystic lymphangioma. A surgical operation was decided but because of his work (in central nuclear industry) this was done 2 months after. The post operative course was simple. The anatomopathologic examination confirmed the lymphangioma with mensurations 6, 3, 1 cm. The cicatrisation was without any problem and 3 months after his state was excellent. A scanner TDM thoracic, abdominal pelvic showed nothing. In the literature, the presence of a lymphangioma in an 46 years adult is not exceptional but unfrequent. No fistula of thoracic duct was observed. We did not perform a classical lymphography with injection of lipiodol on feet. The authors in literature think that this abnormality is present in birth.

Diagnosis of Lymphedema

1. ROLE OF THE LYMPHOSCINTIGRAPHY IN PRIMARY PREVENTION AFTER BREAST CANCER TREATMENT

MARINA CESTARI, MD

PianetaLinfedema Study Center, Terni, Italy

In the lymphological "PianetaLinfedema" Center we focused our attention on sub-clinical stage which includes 142 patients (109 lymphadenectomy - 33 sentinel lymphadenectomy), without clinical evidence of oedema.

Patient evaluation has led to a clinical report including the results of lymphoscintigraphy which allows us to analyze anatomical-functional features of the lymphatic system in the homolateral arm, and identify patients at risk of oedema onset, who present slower radiotracer flow which might not otherwise be identified, and include them in early treatment.

In 56% of the patients who had undergone lymphadenectomy, lymphoscintigraphy had highlighted homolateral slower radiotracer flow in 73% of the cases (also contralateral in 52% of the cases).

In 52% of the patients who had undergone sentinel lymphadenectomy lymphoscintigraphy had highlighted a homolateral slower radiotracer flow

in 58% of the cases (also contralateral in 50% of the cases).

In the case of no lymphoscintigraphy or no slower radiotracer flow only follow-up was requested, while in slower radiotracer flow patients have been included in the early treatment. In both cases patients were informed on preventive measures through individual setting.

In lymphadenectomy, we have observed lymphoedema onset in 17% of patients (74% with slower radiotracer flow) always secondary to accidental or whatever avoidable event in previously informed patients.

In sentinel lymphadenectomy we observed lymphoedema onset in 3% of patients (33% with slower bilateral radiotracer flow) always secondary to accidental event.

This study underlines the necessity to attain the complete compliance of the patients, who have to interpret the preventive measures, particularly highlighted in the case of slower radiotracer flow, only as a fundamental behavioural strategy in primary prevention.

2. ROLE OF LYMPHOSCINTIGRAPHY OF LOWER EXTREMITIES IN PATIENTS WITH INCREASED BODY MASS

IKER E., GLASS E.C.

Lymphedema Center of Santa Monica and Medical Imaging of Southern California, Santa Monica, CA., USA

Background: Patients with enlarged legs and increased body mass index (BMI) are at risk for complications caused by, or resulting in, swelling of the legs. Improper diagnoses in these individuals are associated recurrent infections, progressive disease, increased surgical risk, and the risk of inappropriate treatments.

Objectives: We investigated the use of whole body lymphoscintigraphy (WBLS) to evaluate leg enlargement in these individuals.

Methods: WBLS consists of sterile skin prep, local dorsal pedal anesthesia, intradermal-subcutaneous Tc99m colloid (~15 MBq), mild limb exercise, and imaging, at ~15-20 min., at ~2-3 hr., with ambulation. Normals demonstrate prompt flow to inguinal nodes by 15-20 min. in discrete, nontortuous lymphatics. Normal images at 2-3 hr. demonstrate no dermal retention and good inguinal nodal uptake.

Results: We evaluated 69 consecutive individuals with increased BMI (> 25 kg/sq.m.) (55 female, 14 male, ages 13- 84) with WBLS. Intact lymphatic systems and findings consistent with lipedema were demonstrated in 22. The remaining 47 demonstrated: primary lymphedema (LE) in 31, secondary LE in 12, phleboedema in 3, and obesity alone in 1. 47 of 69 demonstrated lymphatic dysfunction including deficient or accelerated lymph flow, deficient or no nodes, abnormal dermal retention (in 31), or other abnormalities, often mixed. Dermal backflow was demonstrated in 75% with secondary LE compared to 45% in primary LE and 36% in lipedema.

WBLS was useful in all cases for assessing etiology of leg enlargement, recurrent infections, and determining relative contributions of adiposity, lipedema, and primary versus secondary LE. WBLS identifies patients at risk for progressive LE and other complications after lymphadenectomy or other surgery, including sentinel node.

Conclusions: Patients with increased BMI commonly suffer with lymphatic disorders, in whom diagnosis can be difficult. WBLS is a valuable tool for evaluation and classification of these individuals.

3. LYMPHOSCINTIGRAPHY AS A TOOL IN VIZUALIZING PATHWAYS OF LYMPH AND TISSUE FLUID FLOW DURING PNEUMATIC COMPRESSION THERAPY

W.L. OLSZEWSKI^{1,2}, M. ZALESKA¹, A. DOMASZEWSKA¹, JAROSŁAW CWIKLA²

¹ Department of Surgical Research & Transplantology, Medical Research Center, Polish Academy of Sciences, Warsaw, Poland

² Dept. of Transplantation Surgery, Central Clinical Hospital, Ministry of Internal Affairs, Warsaw, Poland

Introduction. Lymphedema of limbs is treated by massage squeezing the mobile edema fluid toward the root of the extremity. In the calf and thigh the natural fluid channels form along large blood vessels, as the saphenous, popliteal and femoral veins and also around small unnamed vessels, leading to the groin region. There they end up at the inguinal crease where skin is connected with the inguinal ligament and external oblique muscle by natural elastic fibers.

Aim. The question arises whether the accumulated tissue fluid can form natural subcutaneous channels crossing the inguinal crease to the hypogastrium. This would facilitate absorption of fluid in normal hypogastrium tissues where connections with normal lymphatics could be formed. Such newly created flow pathways would justify the common practice of treating the core (truncal) lymphatics as a major therapy component before limb massage.

Methods. We investigated with use of lymphoscintigraphy the pathways of lymph and mobile tissue fluid flow: a) across the inguinal and gluteal regions to the healthy non-swollen tissues of hypogastrium and b) in the hypogastrium to the lateral and upper abdominal quadrants, during pneumatic massage of the limb. To prove that there was effective fluid flow during pneumatic massage, the plethysmographic flow measurements were carried out.

Results. We showed that: (i) pneumatic compression pushed isotope in lymph in the still remaining functioning lymphatics and tissue fluid in the interstitial space toward the inguinal region and femoral channel, (ii) there was no isotope crossing the inguinal crease or flowing to the gluteal area, and (iii) isotope injected intradermally in the hypogastrium did not spread during manual massage to the upper and contralateral abdominal quadrants.

Conclusions. Intermittent pneumatic compression is effective in pushing mobile tissue fluid and relocating large fluid volumes toward the groin. However, it does not cross the inguinal crease. This challenges the commonly accepted notion of preparing the hypogastrium prior to massage for receiving thigh lymph.

4. CREEP OF LYMPHOEDEMOUS TISSUE – RESULTS OF TESTS AND PRELIMINARY POROELASTIC MODELLING

M. GALANCIAK¹, K. NOWAK², B. NOWAK¹, P. DOMANOWSKI³, M. KACZMAREK¹

¹ Kazimierz Wielki University, Bydgoszcz, Poland

² Collegium Medium, Bydgoszcz, Mikołaj Kopernik University, Toruń, Poland

³ Univeristy of Technology and Life Sciences in Bydgoszcz, Poland

Standard treatment of breast cancer very often leads to lymphoedema of the arm or trunk and rapid diagnosis of oedematous tissue is essential to prevent an incurable state. The paper presents an apparatus and examples of tests with the use of modified Harpenden skinfold caliper to measure trunkal lymphedema in women after mastectomy. The changes of thickness of the skinfold versus time under constant mechanical stress are investigated. This kind of creep test shows the difference between rheological behaviour of the fold on both, treated and healthy side.

Then, the paper focuses on modelling of processes occurring in the oedematous tissue under stress with help of poromechanics adopted for soft tissue. By assumption, the creep of the modelled material is related to flow of the lymph in the interstitial space during deformation of tissue.

In order to solve the problem with the appropriate mechanical model, initial and boundary conditions the Comsol Multiphysics and Abaqus environments are used. Simplifications concerning two- and three-dimensional geometry and mechanical properties of soft tissue were adopted.

It is expected that the severity of oedema and the changes of the state of the tissue can be determined on the basis of mechanical and structural parameters characterizing the tissue, such as Young's modulus, Poisson's ratio and permeability.

The results are used to discuss the usefulness of the considered test and model for development of diagnostic method of lymphoedema. The method should be enough sensitive to detect early swelling as well as should give simple and reliable tool important for treatment and rehabilitation.

5. MOBILE INFRARED OPTOELECTRONIC VOLUMETRY (PEROMETER®), A STANDARD DIAGNOSTIC TOOL FOR BREAST CANCER RELATED LYMPHEDEMA

ADRIAENSSENS NELE, M.SC.¹, BUYL RONALD, PROF.², LAMOTE JAN, PROF., M.D.¹, LIEVENS PIERRE, PROF.³

¹UZ Brussel, Breast Clinic, Department of Physical Therapy and Oncological Surgery, Laarbeeklaan 101, 1090 Brussels, Belgium

²Vrije Universiteit Brussel, Biostatistics and Medical Informatics Department, Laarbeeklaan 103, 1090 Brussel, Belgium

³Vrije Universiteit Brussel, Physical Therapy Department, Laarbeeklaan 103, 1090 Brussels, Belgium

Nele Adriaenssens, University Hospital of Brussels (Belgium), nmadriae@vub.ac.be, +32 486469542

Background

There is still no consensus on the definition of Breast Cancer Related Lymphedema of the arm (BCRL), because of the many different measurement methods and diagnostic criteria that are used interchangeable within clinical practice and scientific research. This study compares the two most commonly used measurement methods with the most recent technique, infrared optoelectronic volumetry with a mobile Perometer®.

Objectives

The main objective is to determine the most appropriate standard diagnostic measurement tool for the evolution of BCRL, to create a consensus in clinical practice and in scientific research.

Methods

Bilateral arm volume, from the distal point of the ulnar styloid to 40 cm proximal, has been calculated by five different methods: direct absolute volume measurement by water displacement and a Perometer® and indirect circumferential measurements with 4 cm intervals, integrated in the frustrum sign method, single frustrum sign method and disc model.

Results

Eighty participants have been divided into a control group with healthy persons and a patient group with breast cancer patients with and without objectively diagnosed BCRL. The intraclass correlation coefficients of the repeated Perometer® measurements are between .997 and .999. When comparing arm volumes between the different methods, the frustrum sign and the disc model method give the highest and water displacement the lowest volume estimation. Perometer® measured volumes are in between these measurements.

Conclusions

Future research would benefit from the use of the Perometer®, as an international standard diagnostic measurement tool for BCRL, because of its reliability, simplicity, and ergonomic and time investment advantages. The single frustrum sign method should not be used for volume estimations of edematous arms. Limb volume change of the ipsilateral arm of $\geq 10\%$, is most appropriate as a diagnostic criteria for BCRL, but hand dominance should be taken into account when using limb volume differences between both arms.

Conservative Therapy

1. LYMPHOEDEMA IN INDIA

Presented by: DR S.B. GOGIA

Sanwaribai Surgical Centre, New Delhi, India

Abstract

Lymphoedema affects over 20 million in India with the disease mostly filarial in origin but is also increasing due to other causes notably cancer, trauma and repeated infections.

India is committed to eradicate Filariasis by 2015. However it is yet to show impact. . Current efforts have been in the direction of providing single day mass therapy with Diethyl Carbimazine (DEC) tablets in affected districts biannually. Effectivity of this regime depends on compliance of at least 80% of the population but actual compliance has been between 25 – 65%.

Addition of morbidity control has found to help compliance.

Specific treatment

Goals

Reduce ADL attacks

Reduce the swelling

Treat psychological problems associated with a debilitating disfigurement

Measures

Pneumatic Compression

Medicines e.g coumarins were tried. Discontinued due to side affects notably on the liver.

Manual Massage not enough trained persons, expensive

Nodo Venous Shunts

Customized limb supports are now commercially available in India

The Program

Locations

Subcentres/PHCs in Filaria endemic districts and cancer care centres

Equipment required

Measuring tape

Digital camera

Telemedicine facilities with Videoconferencing equipment

Water tank

Lymphoedema Compression pump

Drugs and Consumables

DEC

Penidure LA 12 /Pencom

Tetracycline/Ciprofloxacin/other antibiotics

Compression Bandages

Cotton/foam/stockinette

Anti fungal powders and creams

Local emollient

Soap

Personnel to be trained

Village Level Workers, Entomology assistants, Doctors and other paramedical staff

Typical process

Patient with lymphoedema in a village - seen by Village Health Nurse or Multi Purpose Worker. He/She takes initial history and measurements + Photographs and refers to PHC doctor for review. PHC doctor does the assessment and generally would advice an initial course of antibiotics, leg cleaning and then refers back for compression therapy. The actual care would take place back in the PHC where the patient has to visit the centre at a pre fixed time in the morning or evening for one to two hours. Weekly measurements and photos are done which are monitored either by a visiting doctor on his scheduled visit or remotely through telemedicine. Acute episodes (ie ADL attacks) are managed by change or provision of antibiotics. Benzathine Penicillin (or alternate antibiotics for allergic persons) is given every 3 weeks. Self massage is taught to the patient and continued at home along with bandaging. DEC is given as per schedule of the entire population but may be more frequent in the initial treatment phase to prevent reinfection. Once the limb has stabilized to a lower size, edema care is reduced to as per need.

2. THE PROPER BANDAGING FOR THE PROPER FINAL GARMENT IN LYMPHOEDEMA PATIENT

MICHELINI SANDRO, MONETA GIOVANNI, CARDONE MARCO, FAILLA ALESSANDRO, CAPPELLINO FRANCESCO, FIORENTINO ALESSANDRO, DI FILIPPO GUIDO*

San Giovanni Battista Hospital, ACISMOM, Rome, Italy

**ASL Caserta 1, Caserta, Italy*

This study was originated from the evidence that the compression treatment is the most important element in the management of primary and secondary lymphedema. A good compliance to the bandage is an excellent requirement for compliance in final elastic garment. We studied 314 patients with lymphedema of the upper and lower limbs (121 primary and 193 secondary). All patients were treated with physical protocol of congestive complex comprising the bandages customizable depending on the type of patient (very active, moderately active, low mobility). The type of bandage, also consider the level of the “stop” or lymph in the limb beyond the root of it, particularly the accumulation of fibrotic areas, and with subjective tolerability in acts of everyday life. The final elastic garment, standard or “custom”, was then prescribed according to the response to bandaging during the treatment.

The best results in terms of reduced limb circumference (ranging from 18% to 212%) and tissutal consistency of the same patients were obtained in very active ones, when it was packed multilayer inelastic bandages with under-bandaging corresponding to the fibrotic areas. The customization of the final elastic garments allowed to observe, in a follow up of six months, a good maintenance of the results in 95% of patients. The study confirms the importance of customization of the compression treatment in patients with lymphedema and that the compliance with the final elastic garment is the most important prognostic factor for the maintenance of the results.

3. LYMPHATIC SYSTEM AND SYNDROME OF IMMUNOCOMPLEXES - IMMUNOLOGY PERSPECTIVE

LOSKOTOVÁ ANNA^{1,2,3}, LOSKOTOVÁ JITKA⁴

¹ *Masaryk University in Brno, Clinic of Burns and Reconstructive Surgery, University Hospital in Bohunice, Czech Republic*

² *Charles University in Prague, 3rd Faculty of Medicine, Dept. of Preventive Medicine, CZ*

³ *Salve Centre, Clinic of Physiotherapy, Vysoké Myto, CZ*

⁴ *Masaryk University in Brno, Faculty of Law, Dept. of Financial Law, CZ*

Introduction:

Skin, soft tissues, nervous, vascular and lymphatic system (LS) become (within the systemic reaction) a “locus minoris” as a consequence of overloading, trauma or surgical intervention. In the injured area a functional pathology develops very quickly, represented by muscles and ligaments spasms with reflection in trigger points (TrPs). For the area of LS is event. represented by edema and nearly regular lymphostasis in the area of regional lymph nodes.

Local and systematic reaction is followed by an immunological response presented by deponation of non-phagocyt immunocomplexes (IMC), particularly in “immunologically privileged sites” (vessel walls, connectivum, muscle, subcutis, synovial point). Its consequence is the emergence of “**Syndrom of immunocomplexes**” (sy IMC) in the soft tissues with development of secondary inflammation that leads even to rise of fibrotic changes.

Aim of the study:

To prove that it is necessary to influence functional pathology of LS and soft tissues preferably with **Myofascial-manual lymphatic drainage (M-MLD)** (within the complex therapy) to prevent the rise of secondary inflammation and hypertrophy of scars. And to present that (in case of traumatologic patients) the use of M-MLD is essential just in early stage (after the basic surgical treatment).

Methods:

M-MLD – myofascial-manual lymphatic drainage – used especially in case of local edema and secondary functional lymphoedema, to effect the transport of deponating IMC. Myofascial techniques are influencing tender and trigger points of muscles.

Laboratory-immunological screening of CIK (circulated IMC).

Set of patients:

In the period of 16 years we treated and observed (app. 2.400 patients: 450 burnt patients and 1.950 with contusions of soft tissues, fractures and polytraumas). 180 patients underwent repeated work-up to find out the level of CIK.

Esp. in case of: Tendovaginitis, fibromyalgic sy., states after trauma, pre- and post-operative states).

Results and conclusion for practice (from our experience: 1996-2011):

When functional pathology of LS and soft tissues was treated by manual therapy of M-MLD also with support of peroral therapy (Lymphomyosot drops) the evolution of secondary inflammation was eliminated.

With combination of these 2 therapies we achieve not only harmonisation of LS, circulation, oncotic pressure, but also improve the transportation of deponating and CIK and stimulate erythrophage activity of macrophages in tissues.

Application of these methods shorten duration of the treatment minimally up to app. 30-45%, subsequently it helps to cut down medical expenses. In most cases prevent developing of hypertrophic scars (app in 90%) and contribute to general recovery according to gravity of illness ev. trauma (esp. in case of burn trauma patients and those who undergo reconstructive and plastic surgery).

This complementary approach (within the basic standard therapy) leads to beneficial medical, economic and psycho-social effects.

With this complex therapy we can avoid medical complications and so the medical law disputes too.

“Organism has an enormous ability of reparation”.

4. COMBINED DECONGESTIVE THERAPY IN GREECE: AN EFFECTIVE TREATMENT OF LYMPHEDEMA

E. DIMAKAKOS^{1,3}, J. KALEMIKERAKIS², Z. VARDAKI², G. FOUKA², G. ANTONATOS¹, K. KROUSIANOTAKI¹, EI. LYMPERPOULOU¹, K. SYRIGOS³

¹ Lymphology Unit of AngionMedicine, Center of Vascular Diseases, Athens, Greece

² TEI of Athens, Greece

³ Oncology Unit of 3rd Internal Clinic of the University of Athens School of Sotiria, General Hospital, Athens, Greece

Aim of this work was to study the reduction of volume of the extremity after Combined Decongestive Treatment (CDT) twice a day for four weeks. CDT includes skin care, mld, bandage, exercises and education of the patient. **Method.** We treated 71 patients with either primary or secondary lymphedema (PL-SL) for four weeks. **Results.** From 71 patients with lymphedema 20 patients had primary lymphedema (pl) and 51 secondary lymphedema (sl). 48 were females (13 pl – 35 sl) and 23 males (7pl – 16 sl). At the first measurement we found a mean Edema = 3025 ml, which was 46% over than the normal level of lymph. At the last measurement we found a mean Edema = 1099 ml, which was 14% over than the normal level of lymph. In all patients we had a mean reduction of volume of 65,09% in upper extremity lymphedemas and a mean reduction of volume of 69,96% of the lower extremity. In patients with lymphedema <12 months the reduction was about 72,5% whereas in patients with lymphedema >12 months the reduction was about 55,5%. **Conclusion.** The treatment of Lymphedema with CDT was successfully in all patients with almost the same results in both extremities. Prevention of the onset of lymphedema is of extreme importance. However, a return to as normal a lifestyle as possible by the patient is also essential. The earlier treatment begins after the onset of lymphedema, the better the prognosis for the patient. Moreover the target of the treatment must be a reduction of the volume between 50%-70% of the initial oedema.

5. COMPRESSION THERAPY OF SWOLLEN LOWER LIMBS- TISSUE FLUID HYDRAULICS, CLINICAL EFFECTS

MARZANNA ZALESKA¹, WALDEMAR L. OLSZEWSKI^{1,2}, MARTA CAKALA¹, PRADEEP JAIN³

¹ Department of Surgical Research & Transplantology, Medical Research Center, Polish Academy of Sciences, Warsaw, Poland.

² Polish Academy of Sciences and Central Clinical Hospital, Ministry of Internal Affairs, Warsaw, Poland

³ Department of Plastic Surgery, Benares Hindu University, Varanasi, India

Introduction. Removal of edema tissue fluid (TF) from swollen tissues is indispensable for prevention of limb volume increase, development of fibrosis and dermato-lymphangioadenitis. **Aim.** To apply mechanical compression enabling TF flow to overcome tissue resistance and create flow to non-swollen regions. **Methods.** Hydraulics of tissue fluid in swollen lower limb (lymphedema, venous insufficiency with ulcers, posttraumatic hematoma) were studied using sequential pump at various pressures with no deflation of distal segments and measuring subcutaneous tissue fluid pressure with wick-in-needle method, tissue fluid movement with plethysmography and tissue compliance with tonometry. **Results.** Minimum TF pressures enabling fluid flow ranged between 25 and 30 mmHg. Depending on the stage of lymphedema, to reach this pressure level, sleeve pressures had to be raised from 80 to above 120 mmHg. Much the same was necessary in edema in the postthrombotic syndrome with fibrotic skin. Tonometry measuring skin and subcutis rigidity was found indispensable for choosing proper inflation pressures. Tonometer force of <600g/cm² generated pressures of 40-70mmHg in stage II, however in stage IV tonometer force of 1500 600g/cm² produced pressure of only 40mmHg. This was an indication for sleeve pressures >120mmHg. Continuous recording of circumference changes at 6 levels allowed to calculate centripetal tissue fluid movement. It ranged 13-120 ml at each sleeve inflation. **Conclusions.** In 10 advanced lymphedema cases stage III/IV treated with inflation pressure of 120mmHg, no distal chambers deflation, for 12 months 1 hour a day, a decrease in calf girth by 5-7 cm was obtained and no debulking surgery was needed.

6. FORMATION OF TISSUE FLUID CHANNELS IN LYMPHEDEMATOUS SUBCUTANEOUS TISSUE DURING INTERMITTENT PNEUMATIC COMPRESSION THERAPY

OLSZEWSKI W.L.^{1,2}, ZALESKA M.¹, CAKALA M.¹, JAIN P.³

¹ Department of Surgical Research & Transplantation, Medical Research Center, Polish Academy of Sciences, Warsaw, Poland.

² Central Clinical Hospital, Ministry of Internal Affairs, Warsaw, Poland.

³ Department of Plastic Surgery, Benares Hindu University, Varanasi, India

Introduction. In advanced lymphedema of lower limbs of postinflammatory, posttraumatic or postsurgical etiology the collecting lymphatics are obstructed. Lymph flow is practically nil. Tissue fluid accumulates in soft tissues spaces. Pressures generated by muscular contractions and massage move fluid through spontaneously formed tissue channels. These irregular shape channels are seen along small vein tributaries, in the loose connective tissue and along collagen bundles. We tried to enhance formation of these channels by high pressure long-term pneumatic massaging. **Aim.** To observe formation of tissue channels during high pressure pneumatic therapy using lymphoscintigraphic and biopsy histochemical methods. **Material.** Ten patients with lymphedema stage II/III of lower limbs were investigated. An 8-chamber sequential pneumatic device was used for compression therapy. The parameters of compression were: inflation pressure 120-100mmHg, sequentially from chamber 1 to 8, inflation time of each chamber 50'', daily for 1 h and for a period of 12 months. Lymphoscintigraphy with Nanocoll was performed before, after 6 and 12 months of treatment. Skin and subcutaneous tissue biopsies were taken before and after treatment. Specimens were injected with Paris Blue in chloroform and made translucent to visualize spaces filled with mobile tissue fluid and subepidermal lymphatics. **Results.** Lymphoscintigraphic imaging. After one year of massaging multiple wide channels filled with tracer could be seen in the subcutis on the internal aspect of thigh and along large blood vessels running to the groin. There were no channels around the hip, in the hypogastrium and buttocks. Immunohistochemistry of biopsies revealed presence in subcutis and around veins of open spaces not lined by cells, negative on staining with LYVE1 specific for lymphatic endothelial cells. These spaces were stained with Paris Blue and were of irregular shape with many interconnections. **Conclusions.** Long term high pressure pneumatic compression brings about formation of multiple fluid channels running to the groin and femoral channel but not to the lateral parts of the limb. These channels are not lined with endothelial cells.

7. EXPERIMENTAL APPROACH OF THE EFFECTS OF MULTIDIRECTIONAL VIBRATIONS (ANDULATIONS) ON THE MICROCIRCULATION

PASTOURET F., LIEVENS P.

Department of Rehabilitation Research, Vrije Universiteit Brussels, Belgium

Whole Body Vibration is frequently used in the sports, the wellbeing, and medical fields. Their physiological effects are intensively studied.

The purpose of this study is to examine the changes that occur in the microcirculation due to a short duration exposure of multidirectional vibrations.

Methods:

Various times (3, 6 and 10 minutes) of local vibrations (30 Hz frequency), were delivered on 3 groups of mice. The internal microcirculation of the mouse skin was observed by the illumination microscopy *in vivo*, before (5 minutes), during and after vibrations (rest period of 15 minutes).

Results:

During vibrations, in all cases, we didn't observe an alteration of the arterial, venous and lymphatic vascular walls.

There were changes in the diameter of the venous vessels, and the intensity of the vein coloration, representing an increase in the venous flow. No visible changes were detected on arterial vessels. Concerning the lymph vessel, we didn't see an increase of the permeability during vibrations. The results about lymphatic diameter and lymphangions contractions were very contrasted during vibrations.

Conclusion:

After a short period of local multidirectional vibrations, the venous flow seems to be increased, whereas arterial circulation doesn't appear to be changed.

Although, we observe different reactions on the level of the lymph vessels, these reactions are less sensitive to the vibrations than the reactions of the venous vessels.

Keywords:

Vibrations, Microcirculation, Arterial, Venous and Lymph vessels.

8. PLACE OF VEINOTONICS DRUGS IN LYMPHOLOGY

A. HAMADÉ, C. KRIEGER, T. SAMKHARADZÉ, P. MICHEL*, G. OBRINGER, J.C. STOESEL, M. LEHN-HOGG, H. METZGER

Vascular Medicine, Emile Muller Hospital, Mulhouse, France

** Cabinet de Phlébologie, Wingen-sur-Moder, France*

Background. Veinotonics drugs are normally indicated in the treatment of lymphovenous insufficiency. It is necessary to treat lymphorrhoea and lymphedema of lower limbs by these drugs?

Methods. We report the case of 6 patients, five men and one woman who presented lymphatic fistula with lymphorrhoea on the inguinal region.

All patients underwent a clinical examination and lymphoscintigraphy.

The first group (3 patients) had been treated with high dose of Diosmin: 4 g/die for the first 5 days, 3 g/die for 10 days and after 2 g/die during 30 days associated to local medical care and an elastocompressive dressing at the level of the affected inguinal region. The second group (the remaining 3 patients) was only treated by elastocompressive dressing and local medical care. Also we studied 8 patients, 5 men and 3 women who presented lymphedema of lower limbs. These patients had been treated by Diosmin 3 g/die for 30 days. Doppler ultrasound did not identify venous complaint in any of the 14 patients.

Results. In patients with lymphorrhoea: in both groups, the closing time of the lymphatic fistula was identical: middle 26 days in the 2 groups. In patients with lymphedema of lower limbs, no clinical improvement was noted after the treatment by veinotonics.

Conclusion. Taking into consideration these partial results, we consider the treatment of lymphorrhoea and lymphedema of lower limbs using lymphoveinotonics drugs not to be justified.

Surgical Therapy I

1. OUR EXPERIENCE OF MANAGING ADVANCED LYMPHEDEMA OF LOWER EXTREMITIES

PRADEEP JAIN, P.P. DUTTA, P. GOSWAMI, AMOL PATEL, VAIBHAV JAIN

Department of Plastic Surgery, Institute of Medical Sciences, Banaras Hindu University, Varanasi, INDIA

Introduction: Lymphedema of the extremities in tropical countries is mainly due to Filariasis unless proved otherwise. Poor local hygiene and neglect in early stage may lead to secondary bacterial infection, often advancing the stage of the disease. The extremity, in advanced stage, may really look like a limb of an elephant (the so called "Elephantiasis"). We, hereby present, our experience of managing such cases of advanced lymphedema in developing world.

Patients and Methods: 12 patients with advanced, Stage 4 lymphedema over a period from the year 2006 to 2010, seen in the Plastic surgery. Outpatient were the subject of this study. All of them were initially managed by conservative measures such as local hygiene, skin care, and pneumatic compression where feasible. Inguinal Nodovenous shunt was performed in all except one, followed by pneumatic compression, and then debulking operation (Homan's: subcutaneous excision under the flap) within a week. One of them where no suitable lymph node was found on exploration, Charles' Operation was done.

Observations: The skin of the edematous extremity showed sign of softening from the evening of nodovenous shunt and reached its maximum on 4th day when it became satatic. Pneumatic compression done from the evening of the shunt hastened the process of softening.

Discussion: Stage 4 lymphedema of the lower extremity in advanced form is not an uncommon site in the developing world. In spite of otherwise held view that the lymph nodes are destroyed in Stage four lymphedema, we found soft and pliable lymph node in 11 out of 12 patients enabling us to perform nodovenous shunt. The shunt performed quickened the process of softening and reduced the limb girth. This allowed maximum debulking which otherwise would not have been possible. All the patients were put on compression garments in the post-operative period after the stitches were removed. However, 5 out of 11 patients had increased oedema by the end of one year as they could not continue pneumatic compression at home.

Conclusion: nodovenous shunt followed a week later by Homan's operation is a satisfactory way of managing advanced lymphedema but continuation of conservative measures including the pneumatic compression is mandatory to prevent early recurrence.

2. ROLE OF MICROSURGERY IN PHLEBOLYMPHOLOGY: PREVENTION AND TREATMENT OF LYMPHATIC COMPLICATIONS IN VENOUS SURGERY

BOCCARDO FRANCESCO, CAMPISI CORRADO, CAMPISI CATERINA, ACCOGLI SUSANNA, LAVAGNO ROSALIA, CAMPISI CORRADINO

Unit of Lymphatic Surgery, Unit of Plastic and Reconstructive Surgery, Department of Surgery, San Martino Hospital, University of Genoa, Italy

Lymphatic complications not rarely occur in venous surgery. A protocol for prevention of lymphatic injuries is described and includes pre-operative lymphoscintigraphy and the use of blue dye injected during venous surgery to visualize lymphatics and lymphnodes nearby venous structures. Microsurgical lymphatic-venous shunts are used in phlebolymphelemas after repairing saphenous competence with an external valve plasty. Venous Duplex Scan is used in all patients. Adequate treatment of venous disorders with lymphatic impairment allows also to avoid the appearance of dermatolymphagiodenitis.

Accurate diagnostic investigation and proper surgical technique associated, when necessary, with microsurgical reconstruction demonstrated to be of paramount importance in avoiding lymphatic complications during venous surgery.

3. MICROSURGICAL THERAPY OF LYMPHEDEMA: PHYSIOLOGICAL PRINCIPLES, INDICATIONS AND LONG TERM RESULTS

CAMPISI CORRADINO, BOCCARDO FRANCESCO, CAMPISI CORRADO, LAVAGNO ROSALIA, ACCOGLI SUSANNA, CAMPISI CATERINA

Unit of Lymphatic Surgery, Unit of Plastic and Reconstructive Surgery, Department of Surgery, San Martino Hospital, University of Genoa, Italy

Lymphedema represents a common pathology following trauma, surgery, infections or a congenital lymphatic disorder which can become clinically significant at birth or afterwards spontaneously or after minor events that trigger the onset.

Different methods of treatment have been proposed for the treatment of lymphedema, but most of them aim at treating the effect of the pathology (edema) and not the cause (obstruction, reflux).

Microsurgical procedures represent physiologic operations that allow to restore lymphatic transport capacity in congenital or acquired obstructions of lymph vessels.

Better results are obtained treating the pathology at earlier stages prior to development of subcutaneous fibrosis and lymphatic vessels sclerosis.

Authors report their wide clinical experience in treating peripheral lymphedema with microsurgical derivative and reconstructive techniques, underlying indications and long term results.

4. MICROSURGICAL LYMPHOVENOUS ANASTOMOSES AFTER 45 YEARS- INDICATIONS, TECHNIQUES AND FOLLOW-UP EVALUATION METHODS

WALDEMAR L. OLSZEWSKI

*Department of Surgical Research & Transplantation, Medical Research Center, Polish Academy of Sciences, Warsaw, Poland.
Central Clinical Hospital, Ministry of Internal Affairs, Warsaw, Poland*

Over the last 42 above 1000 microsurgical lympho-venous shunts (lymphnode-vein, lymphatics-vein) were performed in our center in patients with lymphedema of lower limbs. The follow-up has been from 5 to 40 years. The indications for shunts were: postsurgical (after hysterectomy), postinflammatory, hyperplastic and idiopathic lymphedema. The 5-year follow-up results were dependent on the type of lymphedema. In postsurgical group 80% (in the survivals), 40-50% in postinflammatory, above 80% in hyperplastic, and 5-10% in idiopathic group showed decrease of swelling and DLA (dermato-lymphangio-adenitis) rate. Basing on the accumulated experience the main problems have been formulated: (i) establishing proper indications, (ii) postoperative evaluation of shunt patency, (iii) reasons for shunt obliteration, (iv) discrimination of effectiveness of shunts from that of elastic support, massage and antibiotic therapy. Our present recommendations are as follows: (i) indications: lymphoscintigraphy of superficial and deep systems delineating at least one lymphatic and fragment of inguinal lymph node within 3h in all patients with obstructive edema, fast growing edema after hysterectomy or groin dissection not controlled by elastic support, hyperplastic lymphedema in children and teenagers, decompression of thigh lymph stasis before lower leg debulking, (ii) contraindications: lack of even rudimentary lymphatics on lymphoscintigraphy, inflammatory changes in skin and lymphatics, idiopathic lymphedema (previously hypoplastic, precox and tarda), (iii) immediate postoperative low molecular heparin for 6 weeks, long-lasting penicillin for one year or longer, elastic stockings, intensive walking and muscular exercises, foot hygiene (iv) postoperative evaluation: lymphoscintigraphy with liver scanning (time of appearance of tracer in blood circulation), subsidence of DLA attacks, lack of increase of circumference or volume. **Conclusions.** The 5-year follow-up of patients operated in the 1960- and 70-ties without additional therapeutic modalities showed evident efficacy of microsurgical shunting. Today combined microsurgery, long-lasting penicillin and elastic support with intensive muscular exercise do not allow to evaluate the independent effect of lympho-venous shunting.

5. DIRECT RECONSTRUCTION OF INTERRUPTED LYMPHATIC VESSELS MEETS THE BASIC PRINCIPLES OF LYMPHFLOW

BAUMEISTER RUEDIGER G.H.

*Div. of Plastic-, Hand-, Micro- Surgery, University of Munich, Campous Grosshadern
Consultant: Chirurgische Klinik München Bogenhausen, Denningerstr, Muenchen*

Interruption of lymphatic pathways is the number one cause for lymphoedemas in Europe. Lymphatic vessels are more difficult to treat surgically because of their tininess. With the help of high power microscopes this difficulty can be surmounted. Than however, especially in early cases, direct reconstruction with the patients own lymphatic vessels seems to be the most physiological way of repair. It comes as close as possible to the original situation. Lymphatic vessels and lymphfluid have additional advantages which promote the success of a microsurgical reconstruction. Coagulation ability of lymph is low compared to that of blood and lymphatic vessels show the ability of spontaneous anastomosing if they are close together. Furthermore lymphatic vessels show the ability of active pumping and their tiny wall can be nourished by lymph. Direct reconstruction, remaining within the lymphatic system, respects the pressure gradient properly at all times. Clinical datas show therefore long term results with significant reduction in voolume, a long term patency of the grafts and significant improvement of lymphatic outflow measured by lymphoscintigraphies up to a return to normal.

6. VENOUS BRIDGES AS AN ALTERNATIVE OPTION FOR LYMPHOVENOUS SHUNTS IN PEDIATRICS

PAPENDIECK C.M., POZO P., BARBOSA L.

Angiopediatria, Buenos Aires, Argentina

Lymphovenous shunts are an alternative for the treatment of 1° or 2° Lymphedema. One condition is needed: the venous pressure must be normal or low, at the anastomotic level. That means, lower than the lymphflow pressure. A normal valvular venous design – ensure this most important condition. In Syndromes with trunkal venous hypertension there are two options that leads to this condition: 1- by performing, first, a veno-venous trunkular anastomosis, and after, a lympho-venous shunt, 2- translocation of venous trunks (bridges) towards lymphatic collectors. In an obstruction of the subclavian axillary venous trunk, a bridge can be performed with the translocation of the homolateral internal yugular vein, to the subclavia/axillary junction (but consequence is overgrowth of the head and face!) thats because this is not indicated every time primarily before the age of 7y. There does not exist a similar alternative at the inguinal region, performing only one venous anastomosis. 2-. a external yugular vein bridge, to the shoulder or arm (that never imply owegrowth). A Palma technique, with the counterlateral saphena magna, an alternative for inhereted congenital Syndromes with trunkular venous hypertension with overgrowth in 2° Lyhmpedema post surgery or oncological treatments in areas of crossing vascular ways. The purpose of this summary, is the analysis of this non traditional venous bridges during the treatment of primary venous hypertension and 1° or 2° lymph flow hypertension.

Surgical Therapy II

1. PREVENTION AND TREATMENT OF LYMPHATIC INJURY IN SURGERY AND TRAUMA

BOCCARDO FRANCESCO, CAMPISI CORRADO, CAMPISI CATERINA, ACCOGLI SUSANNA, LAVAGNO ROSALIA, CAMPISI CORRADINO
Unit of Lymphatic Surgery, Unit of Plastic and Reconstructive Surgery, Department of Surgery, San Martino Hospital, University of Genoa, Italy

The problem of prevention of lymphatic injury in surgery and trauma is extremely important if we think about the frequency of both early complications such as lymphorrhea, lymphocele, wound dehiscence, and infections and late complications such as lymphangites and lymphedema.

Nowadays, it is possible to identify risk patients and prevent these lesions or treat them at an early stage. It is important to integrate diagnostic and clinical findings to better understand how to properly identify risk patients for lymphatic injuries and, therefore, when it is useful and proper to do prevention. Authors report their experience in the prevention and treatment of lymphatic injuries after surgical operations and trauma. After an accurate diagnostic approach, prevention is based on different technical procedures among which microsurgical procedures. It is very important to follow-up the patient not only clinically but also by lymphoscintigraphy. It was identified a protocol of prevention of secondary limb lymphedema that included, from the diagnostic point of view, lymphoscintigraphy and, as concerns therapy, it also recognized a role to early microsurgery. It is necessary to accurately follow-up the patient who has undergone an operation at risk for the appearance of lymphatic complications and, even better, to assess clinically and by lymphoscintigraphy the patient before surgical operation.

2. SEVENTEEN YEARS' EXPERIENCE OF COMPLETE REDUCTION OF ARM LYMPHEDEMA FOLLOWING BREAST CANCER

HÅKAN BRORSON MD, PHD, CAROLIN FRECCERO, MD, PHD, KARIN OHLIN OTR, BARBRO SVENSSON PT, LT.
Department of Clinical Sciences Malmö, Lund University, Plastic and Reconstructive Surgery (Lymphedema Unit), Skåne University Hospital, SE-205 02 Malmö, Sweden

Introduction: Patients with chronic non-pitting lymphedema do not respond to conservative treatment probably 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 plasty seldom achieved acceptable cosmetic and functional results. Microsurgical reconstructions, although attractive as a physiological concept, cannot provide complete reduction in chronic non-pitting lymphedema because they do not eliminate the newly formed, subcutaneous adipose tissue collections.

Methods: 120 women with non-pitting edema, a mean age of 64 years and a mean duration of arm swelling of 9 years underwent liposuction. Mean age at breast cancer operation, mean interval between breast cancer operation and duration of lymphedema start were 52 years and 3 years respectively. Aspirate and arm volumes were recorded.

Results: Aspirate mean volume was 1865 ml with an adipose tissue concentration of 94%. Preoperative mean excess volume was 1636 ml. Postoperative mean reduction was 102% at 3 months and more than 100% during 17 years' follow-up, 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 1.5, rapidly declining to 1.0 at 3 months, and less than 1 after one year.

Conclusion: These long-term results demonstrate that liposuction 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.

3. LIPOSUCTION NORMALIZES ELEPHANTIASIS OF THE LEG – A PROSPECTIVE STUDY WITH AN EIGHT-YEAR FOLLOW-UP

HÅKAN BRORSON MD, PHD, CAROLIN FRECCERO, MD, PHD, KARIN OHLIN OTR, BARBRO SVENSSON PT, LT.

Department of Clinical Sciences Malmö, Lund University, Plastic and Reconstructive Surgery (Lymphedema Unit), Skåne University Hospital, SE-205 02 Malmö, Sweden

Introduction: Patients with chronic non-pitting lymphedema do not respond to conservative treatment probably 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 plasty seldom achieved acceptable cosmetic and functional results. Microsurgical reconstructions, although attractive as a physiological concept, cannot provide complete reduction in chronic non-pitting lymphedema because they do not eliminate the newly formed, subcutaneous adipose tissue collections.

Methods: 41 patients with an age of 52 years and a duration of leg swelling of 15 years underwent liposuction due to non-pitting, chronic lymphedema. There were 19 primary (PL), and 22 secondary lymphedemas (SL) following cancer therapy. Age at cancer treatment and interval between cancer treatment and lymphedema start were 42 years, and 3 years respectively. Age at onset of PL was 29 years. All patients had received conservative treatment before surgery without further reduction. All were wearing compression garments before surgery. Aspirate and leg volumes were recorded.

Results: Aspirate volume was 4116 ml with an adipose tissue concentration of 94%. Preoperative excess volume was 4195 ml. Postoperative mean reduction was 84% at 3 months and 105% at 1 year, and more than 100% during 8 years' follow-up, i.e. the lymphedematous leg was somewhat smaller than the healthy one. The preoperative mean ratio between the volumes of the edematous and healthy legs was 1.4, rapidly declining to 1.0 at 6 months, and less than 1 after one year.

Conclusion: Liposuction is an effective method for treatment of chronic, non-pitting leg lymphedema in patients who have failed conservative treatment. It is the only known method that completely reduces excess volume. The removal of hypertrophied adipose tissue is a prerequisite to complete reduction. The reduced volume is maintained through constant use of compression garments postoperatively.

4. SURGICAL DEBULKING PROCEDURES IN VERY ADVANCED LYMPHEDEMA OF LOWER LIMBS

WALDEMAR L. OLSZEWSKI^{1,2}, PRADEEP JAIN³, JOSEPH VICTOR³, M. DURLIK^{1,2}

¹ *Department of Surgical Research & Transplantation, Medical Research Center, Polish Academy of Sciences, Warsaw, 02-106, Poland*

² *Central Clinical Hospital, Ministry of Internal Affairs, Warsaw, Poland*

³ *Indian Lymphology Centers in Varanasi and Thanjavur, India*

Very advanced stage IV lymphedema of lower limbs cases are not common in the Western hemisphere. They account for less than 1 percent of all lymphedema patients. However, they are frequent in the Asian and African countries. The number of advanced cases is estimated at a level of 10-15 million. The historical surgical procedures comprised total denuding of limb down to fascia and covering with epidermal grafts. The results were unsatisfactory because of non-healing, acute infections in the non-removed skin, epidermal ulcerations and plasma leakage from the uncovered surfaces and increasing edema of the dorsum of foot. Our studies revealed presence of microorganism in the calf and foot skin biopsies. The question arose whether these microbes may not be responsible for non-healing and increasing foot edema. Basing on the contemporary knowledge of type and localization of infection as well as visualization of lymphatic pathways allowed to redesign the surgical procedures. The by us designed new approach with preoperative preparation and surgical protocol include: 1. Antibiotic preparation (ciprofloxacin 1.0 g daily for 3 months); 2. Daily disinfection of skin with antimicrobial soap containing phenol or similar chemical for 14 days before operation; 3. Two-week limb elevation in bed; 4. Limb surgery divided into 2 stages: a. removal of fibrotic inguinal lymph nodes and vessels, b. 3-4 weeks later formation of long anterior and posterior flaps below the knee and above the ankle, without denuding the entire calf down to the fascia as in the classic Kondoleon's operation; 5. Bed-confined limb and continuation of 0.5 g cipro for another month. Upper and lower flap underwent marginal necrosis healed later on by granulation. Occasionally epidermal grafts were laid on 5 elastic support (pressure grade III). This modified approach allowed patients to become ambulant, prevented further destruction of joints and frequent life-endangering septicemias. It also allowed males normal sexual contacts.

5. SURGERY OF MALE GENITAL LYMPHEDEMA

W.L.OLSZEWSKI^{1,2}, S. GOGIA³, P. JAIN³, M. ZALESKA¹, M. DURLIK²

¹ Department of Surgical Research & Transplantation, Medical Research Center, Polish Academy of Sciences, Warsaw, 02-106, Poland

² Central Clinical Hospital, Ministry of Internal Affairs, Warsaw, Poland

³ Indian Lymphology Centers in Varanasi and Thanjavur, India

Introduction. Scrotal and penis lymphedema is not a frequent but extremely embarrassing pathological condition. It eliminates patients from sexual life, it is burdened by recurrent infections with septic symptoms and in advanced stages urination using penis becomes impossible. The etiology is in 99% of cases of infective origin. On lymphoscintigraphy there is no flow from the swollen organs to the inguinal lymph nodes. Moreover, in most cases lymphedema of hypogastrium subcutaneous tissue develops. Fortunately enough genital lymphedema doesn't affect testes and only the superficial lymph drainage is impaired.

Aim. To work out a fast surgical method of debulking scrotum and penis. Material. 48 male patients with obstructive lymphedema of scrotum and penis were operated upon. In 32 patients penis was hidden in the swollen scrotum. In 5 cases there was a saxophone penis with minor scrotal edema.

Method. Patients were receiving amoxicillin or ciprofloxacin for at least 1 month before operation. Scrotum. Testes were temporarily exteriorized. A small anterior flap was made, bulk of scrotal tissue was removed, large posterior flap was constructed. Testes were placed between skin flaps and their margins were stitched together. Penis was freed from the swollen scrotum and circumcision was made. In cases with lax skin penis was wrapped with a pedunculated flap. The saxophone penis had excess of skin removed from a longitudinal incision.

Results. Healing of surgical wounds was uneventful in all cases within 3-4 weeks. There was no dehiscence of wounds. The follow-up in cases under observation for 3 years revealed slow increase in scrotal volume by approximately 20%. There was scar formation in some penises with slight disfigurement. In all cases the sexual activities became possible.

6. INTEREST OF SELECTIVE LIPOSUCTION AFTER LYMPHO NODES TRANSPLANTATION IN LIMBS LYMPHEDEMAS

J.P. BRUN, C. BECKER, G. PIQUILLOUD

Lymphology Unit Georges Bizet, Paris, France

Lympho Nodes Transplantation (LNT) is now well described and published since several years. The protocol observed in a decongestive therapy (DT) during 15 to 21 days before surgery including manual lymphatic drainage (MLD), multi layer bandaging (MLB), specific exercises under bandages (SE) and compression garment (CG).

Then surgical treatment using free nodes transplantation was made. Hospital care is generally 3 days. Sessions of MLD are started during 10 days "upstream" the nodes graft, largely applied on safe territories of the body. Then for the 10 next days MLD on the site of the nodes graft is included. Then MLD, MLB, SE were setting again. MLB and CG are continued.

The follow-up of the post operative period was assessed by the multidisciplinary consultation at 15 days – 1 month – 3 months – 6 months and more.

In certain cases CG must be give up.

A score of satisfaction has been established by the patient himself, the surgeon and the physiotherapist.

On the other hand, fibrosis must be resisted in spite of LNT surgery and correct DT.

In such a case a limited and selective liposuction is applied respecting lymphatic collectors that it to say in the external aspect of the upper or lower limbs.

A Compression is maintained for generally 3 weeks and MLD continued.

Finally, in our experience, selective liposuction must be useful to improve excess of fibrosis in lymphedema size provided that it will be gently, selectively and rationally applied.

Clinical cases are exposed.

7. THERAPEUTIC CONSEQUENCES OF SUPRA CLAVICULAR OUTLET SYNDROME IN UPPER LIMB LYMPHEDEMA

J.P. BRUN

Lymphology Unit Georges Bizet, Paris, France

Associated lesions must accompany secondary upper limb lymphedema (SULL).

In the past, the author has largely published on this subject.

Particularly, the presence of fibrosis in Supra Clavicular Area must be detected by clinical or para clinical assessment.

Strict palpation, echography, scan and or RMI make conspicuous the fibrous reality.

Nerves and vessels must be here compressed.

Related the vessels status we observed in a serial of 600 patients:

	Arterial Diseases		Venous Diseases	
	N	%	N	%
Occlusions	4	0,67	101	16,80
Stenosis	26	4,33	50	8,30
Compressions	8	1,33	68	11,20
Fibrosis	91	15,17	139	23,20
	129	21,50	358	59,50

We can imagine that lymphatics vessels may have the same status. Unfortunately, as we can know, no particular studies have been done on this subject in the literature.

What are the therapeutic consequences in these conditions?

- Isn't opportune to place the upper limb in a declivous position in order to improve the lymphatic drainage?
- Are the drainage manoeuvres efficient on those fibrotic supra clavicular areas?

The author develops and adorns with images the subject?

HYSTORY OF THE EUROPEAN SOCIETY OF LYMPHOLOGY

In 1978, at a scientific meeting organized at the University Hospital of Grenoble, Albert Leduc and Alexandre Pissas, after having made each other's acquaintance, evoked the possible creation of a French-speaking association for the study of lymphatics. The International Society of Lymphology (I.S.L.) had been existing for several years at that time but it organized its congresses every two years in regions often far away from Europe. Moreover, English was its exclusive working language. These two reasons contributed to our deciding to found a European Society. The working language of which should be French but open to the use of other languages such as English, Spanish or Italian if authors wanted to present their papers in their native language. It was in 1978 that a first preparatory meeting was organized with some colleagues and friends at the Vrije Universiteit Brussel. We had taken the opportunity of a passing through Europe of Isidoro Caplan to invite several colleagues who might have been interested by this initiative.

Following persons were present: Pierre Bourgeois, Isidoro Caplan, Geneviève Hidden, Albert Leduc, Pierre Lievens, Joseph Pflug, Alexandre Pissas, Sabine Godart and Serge Theys. The by-laws had been drafted by Albert Leduc.

After having been discussed they were adopted unanimously.

The by-laws of the society, which have remained unchanged until today, are particular in so far as they distinguish between full and associate-members, the latter having the possibility to be appointed as full-members after submitting and presenting a scientific work for evaluation by full-members.

By so doing, we wished to create a scientific society which could become the birthplace of studies in the particular field of lymphology. The name of the society was suggested by Alexandre Pissas and so was born the "Groupement pour l'Etude des lymphatiques: G.E.L.". Sabine Godart requested not to be considered as founding member because she already was founding member of the International Society of Lymphology.

Sabine Godart nevertheless remained a faithful member of the GEL and she took part in all our scientific meetings.

The head office of the GEL was located at 103 Laarbeeklaan, 1090 Brussels (Faculty of Medicine of the Vrije Universiteit Brussel, department of Motor Revalidation).

Albert Leduc was elected as founding president of the GEL.

With Pierre Lievens, he organized the first scientific meeting of the GEL in Brussels in 1980.

The GEL achieved legal recognition by Royal decree on 02.12.81.

The by-laws of the Groupement pour l'Etude des Lymphatiques were published in the official Belgian State Journal on 09.01.82.

The GEL was officially born.

In 1982, at the general assembly which was held after the scientific meeting in Grenoble and organized by Alexandre Pissas, the name of the GEL was modified: albeit with unchanged initials, the association became "Groupement Européen de Lymphologie".

This amendment was published in the Belgian State journal dated 21.04.83.

Albert Leduc left the presidency of the GEL and was succeeded by Geneviève Hidden who hence became the second president of the group.

After her highly appreciated presidency, G. Hidden left her function over to Alexandre Pissas.

A. Pissas will remain chairman for several years.

In his turn, he quits the presidency of the Group after having been elected as chairman of the International Society of Lymphology.

The first editing of our Journal was in May 1990. Pierre Bourgeois holds this ponderous office up to his designation to the g.e.l.

Presidency in occasion of the Congress of Malmö.

In 1998 both Jean Paul Belgrado and Olivier Leduc were elected respectively treasurer and secretary.

In 2000, the general assembly decides the transfer of the headquarters to the address of the Université Libre de Bruxelles, 50 av. Fr. Roosevelt, 1050 Brussels, Service de Kinésithérapie et Réadaptation.

In 2001 A. Pissas resigned as President of G.E.L. because he was elected President of the International Society of Lymphology.

Corradino Campisi succeeded Alexandre Pissas in 2001, during our congress organized in Porto by the group around our vice-president Nuno Grande.

C. Campisi accordingly became the fourth president of the GEL. It is worthy of note that C. Campisi had just quitted the presidency of the International Society of Lymphology.

It was Pierre Bourgeois' turn to take over the succession of C. Campisi during the meeting organized in Malmö by Hakan Brorson in 2003.

Sandro Michelini was elected editor in chief.

The GEL members very much appreciate all the work accomplished by P. Bourgeois to make the journal successful.

On the 14 th of February 2005, Professor Joseph Johann Pflug, founder member of GEL, passed away suddenly at his home in Germany.

In 2005, during our congress in Rome, a proposal is introduced to substitute E.S.L./ G.E.L., (initialization of European Society of Lymphology), at the general assembly.

This modification is approved by vote during the meeting organized by E. Földi in Hinterzarten in 2006.

Pierre Bourgeois left the presidency of the society and was succeeded by Sandro Michelini, the present President.

In 2009, during the annual Congress in Paris, Albert Leduc was elected Distinguish honorary President of the European Society of Lymphology.

Francesco Boccardo was elected as editor in chief of the Journal.

23rd International Congress of Lymphology

September 19-23 2011
Malmö, Sweden

23rd International Congress of Lymphology



Welcome to Sweden and the 23rd International Congress of Lymphology!

Dear Colleagues and Lymphologists!

The Department of Plastic and Reconstructive Surgery at Malmö University Hospital, Sweden, is honoured to organize the 23rd International Congress of Lymphology in cooperation with the Faculty of Medicine at Lund University, and the Swedish Lymphology Association. Problems related to the lymphatic system are central issues for us, and one of our main focuses is the development of surgical techniques related to lymphology.

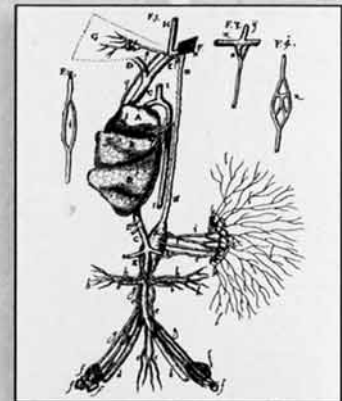
Olof Rudbeck [1630-1702], a Swedish scientist, published his first treatise *De Circulatione Sanguinis* in 1652, at the age of 22 years only, and he actually became the first one to describe the delineation and function of the lymphatic system in *Nova Exercitatio Anatomica*, which he published one year later. With this historical perspective in mind, we are enthusiastic about hosting the 23rd International Congress of Lymphology in Sweden. We are also proud of being entrusted with the task of arranging the prestigious congress in the city of Malmö. In fact, Malmö connects on to another pioneering scientific work in the field of lymphology performed by Thomas Bartholin [1616-1680], who was active in the nearby capital of Denmark, Copenhagen.

In 2011, from September 19 to 23, the most renowned scientists from all over the world will gather in Malmö to present and debate their front line knowledge and experiences in the various fields of lymphology. This will assure for an interdisciplinary and all-round illumination of the lymphatic system, its pathophysiology, and the state-of-the-art of different treatment regimes. Moreover, at the end of the summer but before fall, September is an excellent time of the year to visit Sweden.

We look forward to seeing you all in Malmö on this very special occasion. Please contact us for any additional information or suggestions that can make your stay even more pleasant in our dynamic and beautiful city.

On behalf of the Organizing Committee,

Håkan Brorson, MD, PhD
Congress President



Turning Torso, a 190 m tall building for residents.
Photo: Pierre Mens

www.lymphology2011.com

23rd International Congress of Lymphology

Program outline

Monday September 19

Registration opens

Tuesday September 20

Welcome reception

Wednesday September 21

Optional social evening,
Tivoli Gardens in Copenhagen

Thursday September 22

Congress dinner

Friday September 23

Congress ends at noon



*Tivoli Amusement Park
in Copenhagen.
Photo: Tivoli*



Life in the Viking village



*Malmö Opera House
Photo: Charlotte Strömwall*

Topics will include:

- Anatomy of lymphatic system
- Physiology of lymphatic system (lymphatic endothelial cells, lymphatics and lymph nodes)
- Physiopathology of lymph stasis and related disorders (infection, fibrosis, adipose tissue)
- Prevention
- New frontiers in lymphatic research (genetics, lymphangiogenesis, lymphatic dysplasias)
- Lymphatic imaging
- Cancer and lymphedema (oncolymphology & sentinel node)
- Filariasis and lymphedema
- Clinic on lymphedema (diagnosis, staging, classification)
- Treatment (surgery, complex decongestive therapy, rehabilitation, alternative therapy, new approaches)
- Phlebolympology

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