Critical Lower Limb Ischemia

Principles and Practice

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Preface

Evidently critical limb ischemia is an emerging disease of this modern era and is tired to the population's mean age increase. According to various studies the incidence of critical limb ischemia in western society is 300/500 cases per million inhabitants per year. This is essentially due to two factors: undisputed increase in atherosclerotic diseases, but also a greater incidence of this disease in females and an average age increase in the population. In the past few years the combination of these two strictly correlated factors, has determined an increase in the number of patients that annually demand specialist treatment for this disease.

The social importance of this problem is more comprehensible if one considers that over 50% of patients with untreated chronic critical limb ischemia will most probably have to face therapeutic amputation as a result. Until recently, diagnosis, conventional treatment and surgical treatment of effected patients were essentially left in the hands of medical teams that would improvise some type of therapy. Results were unsuccessful and lead to a high incidence of amputations.

Today, this situation is not longer justifiable. Almost all the western world has founded centers that practise vascular surgery and are dedicated to treating critical ischemia. Therapeutical diagnostic protocol and guidelines have been set in place. As a result the annual number of limb amputations has decreased. An objective comparison of this reality can be seen every yea r by the percentage of patients that effected by this disease go through destructive therapy. The incidence of patients effected by critical ischemia is similar throughout western society. What differs unfortunately is the number of patients that will undergo amputation. Amputation is considerably lower in countries where vascular surgery structures are available to treat the disease. Not treating this disease adequately is morally incomprehensible and economically inconvenient.

Apart from the obvious ethical considerations that justify limb revascularization as opposed to amputation the former is highly cost effective. At a quick but superficial glance it may seem less destructive therapy and may appear less costly compared to revascularization treatment, but a more attentive examination of the costs will prove otherwise.

Undoubtedly, amputation does not require particularly expensive preoperative study nor the use of prostheses or surgical supports of a pricey nature. Nevertheless, after amputation, one must consider social costs that are not easily assessed. Society has inherited a dependent invalid (only 30% of amputated patients reacquire a satisfactory level of autonomy) that requires a prosthesis with physical and physiological assistance. Consequently, we thought it opportune to try to synthesise in one volume the "state of the art" of this often unrewarding sector of vascular surgery. We hope, because of the prestigious collaboration obtained, that perhaps we may have succeeded.

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Presentazione

Quando mi hanno proposto di fare una presentazione a questo trattato monografico sull'ischemia critica degli arti inferiori ho pensato per un momento che non avessi più, ormai, una specifica preparazione dottrinale e pratica tanto aggiornata e presente da poterlo esaminare con critica consapevolezza.

Ricordavo bene che in tempi non più recenti molte forme di ischemia acuta e grave erano considerate spesso fatali per l'arto, che non erano sistematizzate le indicazioni e le formule per interventi restaurativi, che alcuni aspetti della fisiopatologia rimanevano ambigui e che la conclusione terapeutica era per lo più la mortificazione corporea dell' amputazione dell'arto con tutte le sue implicazioni sociali e lavorative. L'aumento della durata della vita e quindi della più frequente osservazione degli accidenti vascolari da arteriosclerosi, le motivazioni morali e sociali più apprezzate insieme con i progressi scientifici e le disponibilità tecnologiche hanno fatto in modo che, sul tema dell'ischemia acuta degli arti, si sviluppasse un moderno interesse di ricerca e di applicazione con indicazioni e coniugazioni terapeutiche innovative. Ho denunciato quindi lo scarto generazionale delle conoscenze, mi sono reso conto della risistemazione delle nozioni fisiopatologiche e della raffinata osservazione strumentale attualmente possibile, ho rivalutato l'intensa preoccupazione sociale su questo evento patologico così gravemente offensivo delle funzioni e della stessa vitalità. Mi sono infine compiaciuto dell'invito a presentare un libro con tutte queste caratteristiche di validità, tanto più che me lo proponevano ottimi chirurghi studiosi di chirurgia vascolare, angiologi, anatomisti, angioradiologi e quanti, in qualche modo, recepiscono e sviluppano i problemi e gli interrogativi dell'angiologia e della chirurgia vascolare.

Questa mia presentazione, quindi, non si ispira ai doveri dell'accademia ma si inserisce con soddisfazione nel quadro di un acculturamento specifico che trasmette un messaggio di grande attualità sull'ischemia degli arti inferiori: questi sono i suoi fondamenti causali, queste le sue espressioni, questo è quanto possiamo attualmente fare e come. Non si tratta di un lavoro esegetico di storie e nozioni, pur nella sua esposizione tradizionale, ma di una elaborazione di concetti e reperti che dal rigore teoretico passa alla conoscenza razionalista, dà luogo a nuovi indirizzi, dimostra fervore di idee e analisi in profondità prodotte da esperienze mature. Le tematiche sono forti e serie, il tono dell'opera è vivace e brillantemente espositivo.

Mi fa particolarmente piacere che in molti capitoli risulti l'ottimo contributo di alcuni professori della nostra Facoltà e di Università straniere che mi onoro di avere avuto come Allievi.

Giorgio Di Matteo

Foreword

It is not an easy task that of collecting in a single volume the problems of critical limb ischemia, especially when the argument is so extensively addressed as it is herein. The issue of critical limb ischemia is a real benchmark for the vascular surgeon.

Undoubtedly this is a difficult surgery with unwarranted results. National and International meetings do not address the issue frequently. By reading the index of this book, one can observe a traditional structure, with complete and updated information, rigorously ordered

The fisiopathology of critical limb ischemia is meticulously addressed, with a complete analysis of all risk factors, included the rarest ones. Diagnostic and therapeutic issues, both surgical and medical are extensively discussed.

Surgical techniques are meticulously described in all their aspects. Other than these techniques, which are usually known by the vascular surgeon, the book addresses the less frequently used therapies. Wide attention is given to post-surgical fisiopathology, with information on hemodynamic and microcirculation. The choice of graft material reflects that of modern experiences, with data on early and late patencies of the different surgical techniques. Modern endovascular techniques and rehabilitation problems are also addressed.

For its completeness and attention to details this book is addressed to trained vascular surgeons, however it will be very useful also for those who are approaching this kind of surgery for the first time and for those who are facing unusual problems.

Massimo D'Addato

Aknowledgements

We would like to thank the prestigious authors who enthusiastically accepted to participate at this feat. It is through their efforts that this book has become possible. A book that tries to analyse all the current aspects of critical limb ischemia. To all of them we extend our deepest gratitude. We are honoured and deeply grateful for the esteem and the trust extended to us during the processing of this demanding task.

Particular thanks go out to Professor Giorgio Di Matteo, Emeritus Professor of Surgery, University "La Sapienza" of Rome and to Professor Massimo D'Addato, Professor of Vascular Surgery at Bologna University. Professor Giorgio Di Matteo is a historic figure and a reference point for Italy's Surgery, Professor Massimo D'Addato is a historic figure and a reference point for Italy's Vascular Surgery. They participated with enthusiasm on this book and have honoured us with their presentation.

Our thanks also go to Prof. Vincenzo Saraceni, Professor of Physical and Rehabilitation Medicine at "La Sapienza" University, Rome and Health Committee Chairman for the Latium Region of Italy. We thank him for participating and presenting the chapter concerning physical therapy and rehabilitation. We also thank him for his perception and the interest shown on this delicate topic of critical ischemia and limb salvage. A topic that introduced social and economic implications.

We thank Mr. Salvo Esposito and Dr. Mario Pecorelli, for contributing all the experience they gained in the field of vascular sutures over the years. It's thanks to their professional expertise, on a topic of such live scientific interest, that the idea came to light and this project is now completed.

Our thanks to Dr. Sandro Colaiuda and Dr. Fabio Colaiuda who are responsible for all the diagrams in our each chapter. Their work as precise and attentive medical designers has enriched our work tremendously.

Our thanks must also go to Dr. Federica Cameli who is responsible for the linguistic review of our work and many other works present in this book.

Last, but not least, a special thanks is extended to our resident Dr. Enrico Leo. His collaboration has been decisive throughout the work. He has followed this project with love and dedication. He is the author of many chapters written with attention, competence, sense of criticism and ulmost cultural impetus.

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