EDITORS

Management of Acute Limb Ischaemia Over Two Decades: The Swedish Experience

L. Jivegård and U. Wingren

Departments of Vascular Surgery, 1 Sahlgrenska University Hospital, Göteborg and 2 Central Hospital Karlstad, Sweden

Only two decades ago, many patients with acute lower limb ischaemia routinely underwent emergency arterial thromboembolectomy with only an electrocardiogram as a preoperative investigation. In the unit* of the authors such management was used in 90% of acute lower limb ischaemia cases, resulting in only 55% one-month survival without amputation. Similar results were reported elsewhere.1 In 1997, 1054 acute lower limb ischaemia events were reported to SWEDVASC, the Swedish National Vascular Registry. Forty-four per cent of these were treated with arterial thromboembolectomy, 31% with thrombolysis, 7% with femorodistal bypass, and the rest were graft thrombectomies. Reocclusion and mortality rates within 1 month were 9% and 15% for embolic and 24% and 14%, respectively, for thrombosis cases. What has happened with management strategies over the last two decades?

Ever since the first successful embolectomies in 1911, management strategies have changed back and forth from non-surgical to surgical treatment. In a Swedish series of 382 patients operated upon during the two decades after 1911, only 23% survived without amputation.2 Due to these rather poor results, more conservative strategies were advocated. The introduction of anticoagulants again popularised non-surgical management. Results were similar to or better than for surgical management.3 During the fifties, surgical treatment was used increasingly often, but it was the introduction of the balloon-tipped catheter that started a new era in 1963. During the sixties and seventies, the number of patients diagnosed with acute limb ischaemia increased, probably partly due to an increasing number of elderly people in our society. The age-adjusted number of arterial thromboemboctomies in Sweden increased yearly by 3% and 7.5% for women and men, respectively, during the years 1969–1983.4 This trend ended in the mid-eighties when the number of arterial thromboemboctomies in Sweden levelled off, thereafter decreasing. In 1997, the number was approximately 50% of that reported for 1984 (in-patient register, Swedish National Board of Health and Welfare). Several explanations for these changes can be found.

Two decades ago it became apparent that the balloon-tipped catheter was not the saviour for all acutely ischaemic limbs. The outcome as regards limb and life was often poor after thromboemboctomy, especially in patients with severe atherosclerotic occlusive disease.5 6 By contrast, emboctomy in non-atherosclerotic arteries was usually successful.8 Differentiation between embolic and thrombotic events was therefore suggested, the latter preferably being treated with a semi-elective bypass procedure.7 A case was also made for non-surgical management using heparin.8 Another approach based on an assessment of the severity of the ischaemia was suggested from this institution* and others.9 With this policy, acute ischaemia patients with severe ischaemia underwent emergency surgery. The others, irrespective of the presumed aetiology, were initially treated with heparin and followed closely by vigilant clinical evaluation.4 Cardiac function, which is often poor in these patients, was also monitored. Most patients had arteriography within

*At the time of the present work both authors were at the Department of Vascular Surgery, Sahlgrenska University Hospital, Göteborg, Sweden.
a day or two after admission followed by delayed embolectomy or vascular reconstruction, when appropriate. In patients with decreasing symptoms during heparin therapy and/or a high operative risk, nonsurgical treatment was continued. As a result of this policy, emergency operations for acute ischaemia decreased (90% during the seventies, 50% during 1983–1985, and 30% during 1986–1989) in our unit.*

How can the severity of the ischaemia be safely assessed? It has been suggested that muscle weakness, especially in combination with cyanosis or mottling of the skin, demonstrates a limb needing emergency revascularisation. In a survey in 1998 sent to and answered by all 44 units in Sweden providing vascular surgery, we found this clinical policy to be established in Sweden. Seventy-one per cent of the units considered loss of motor function to be one of the two most important indicators for emergency revascularisation. The corresponding rate was 51% for loss of distal sensibility, 44% for pain and 28% for cyanotic/mottled skin. Distal coldness and absence of audible ankle Doppler flow were ranked very low as indicators. Acute limb ischaemia patients were always managed by vascular surgeons in 43% of local, 59% of county and 100% of the university hospitals. Moreover, the replies indicated that emergency revascularisation is now used in 30% of the cases, while the remaining patients undergo arteriographic and other investigations before the final treatment is instituted. Overall, surgical treatment is used for 49%, 35% and 32% of acute limb ischaemia patients in local, county and university hospitals, respectively.

The most recent therapy, local intra-arterial thrombolysis, was introduced to Sweden during the years from 1990 to 1996. In 1996, 513 and, in 1997, 376 cases were registered, and this may explain the significantly decreasing number of operations for acute limb ischaemia during this decade. Much faith for better results and lower costs has been pinned on thrombolysis but protective pharmacological treatments may be expected in the future, making the approach promising and exciting. Shortened treatment times and improved limb salvage may result from such refinement.

Today emergency arterial thromboembolectomy is rarely required and overall results of treatment for acute limb ischaemia have improved. The last two decades have thus seen a rise and fall for acute surgical thromboembolectomy, and for local intra-arterial thrombolysis a rise, and perhaps also the beginning of the end of the rise. An individualised approach based on clinical findings, and/or investigations to evaluate the degree of ischaemia, will probably be the basis for managing these cases in the years to come. Finally, a growing role of angiologists, coagulation experts and interventional radiologists working with, or at times without, vascular surgeons, is expected in the management and treatment of acute limb ischaemia.

References


11. Ouriel K, Veith FJ, Sashara AA. A comparison of recombiant


Accepted 12 March 1999