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Vascular Surgery in the Elderly: Experience in a Developing Country

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In Saudi Arabia, the number of elderly people is steadily increasing. Over a six-year period, 95 consecutive patients aged 70 years and over were managed in a Saudi vascular unit. There were 55 males and 40 females and the mean age was 75.8 years (range 70–100 years). Sixty-seven (70.5%) patients presented with mainly critical chronic lower limb ischaemia, 21 (22.1%) with acute lower limb ischaemia and only seven (7.4%) had abdominal aortic aneurysm (AAA). Forty patients (42%) were managed conservatively, i.e., no reconstructive vascular procedure was performed according to certain exclusion criteria. The other 55 (58%) were managed surgically and underwent a total of 63 vascular procedures to revascularise 72 limbs. There were 43 (68.2%) primary reconstructive bypass surgical procedures of various types, 19 thromboembolectomies and only one angioplasty. The results in both groups were compared according to the main two endpoints, namely: 1) death (within two months of admission and/or after procedure); and 2) major amputation (below- or above-knee amputation) within one year in the ischaemic group. A significantly low amputation rate was found in the surgical group compared with the conservative group (10.9% vs. 32.5%). Furthermore, the mortality rate was lower in the surgical group than in the conservative group (7.3% vs. 20.0%). In view of our data, an active surgical reconstructive approach is recommended whenever possible, irrespective of the patient's age. (*Asian J. Surgery* 1996;19(4): –)

The impact that ageing populations will have on medical practice over the next few decades is a well-recognised problem in developed rich countries, as the number of elderly people steadily increases.¹⁻⁴ For instance, people aged 75 years or more are, as a percentage of the total population, currently the fastest-growing sector of the American population. As a result, it is projected that approximately 40% of American people will survive to the age of 80.⁵ In a fast-developing country such as Saudi Arabia, 4.2% of the total Saudi population (12 million) are over 60 years old, according to the 1993 National Census.⁶ This section of the population is expected to reach 2.3 million by the year 2025, i.e., a greater than five-fold increase.⁷ A similar change is expected in other countries

in the Arabian Gulf.⁷

With the "greying" of the population comes a greater susceptibility to chronic disease conditions, among them atherosclerosis and its complications. Although atherosclerosis prevalence is currently not very high in Saudi Arabia compared to Western countries, one may expect a steady increase in its incidence in the next few decades in view of two main factors: the high incidence of diabetes mellitus⁸ and a change in lifestyle to a Western one, particularly in dietary habits.

The proper management of the elderly patient with peripheral vascular disease can pose a difficult challenge to the general practitioner,⁹ the health system generally^{1,10} and, eventually, the treating surgeon. Vascular surgery has more difficult dilemmas and stark choices than most other branches of medical care. It is associated with a significant number of possible complications that can be catastrophic. Knowledge of the expected operative morbidity and mortality is mandatory prior to any decision. The accurate assessment of the risk/benefit ratio for each elderly patient is crucial, particularly in countries with peculiar socio-economic status.

In this article, two groups of elderly Saudi vascular

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patients aged 70 and over who were managed conservatively or surgically were compared to define the best approach in their management.

PATIENTS AND METHODS

Over a six-year period from October 1988 to September 1994, all patients aged 70 years and over who presented to the author with an ischaemic lower limb or abdominal aortic aneurysm (AAA) were studied. All patients were managed in the vascular surgery unit and assessed by a team consisting of a cardiologist, an internist, an anaesthetist and the author, a vascular surgeon. Surgical intervention was considered in all patients and was actually performed in 55 patients (58%). In contrast, 40 patients (42%) were managed conservatively, i.e., no surgical revascularising procedure was attempted. Our criteria for a conservative approach included: unfit patients, as decided by the team, particularly those patients with a very limited life expectancy, or patients presenting with very distal, i.e., foot, atherosclerotic disease in diabetic patients. Frank gangrene involving the whole leg was scheduled for primary amputation and is not included here. The outcome of each approach in the two groups was compared with regard to the eventual two endpoints defined as: 1) death within two months and/or in the same admission, or after vascular procedure, and 2) major amputation (below or above knee amputation) within one year in the ischaemic group. All but five patients were followed up for a period ranging from three months to five years.

Table 1. The clinical pattern of patients in the conservative management and revascularisation groups

	Conservative management group (n = 40)	Revascularised group (n = 55)
Age (mean)	76.4 years	75.4 years
Females	17 (42.5%)	23 (41.8%)
Chronic ischaemia	30 (75.0%)	37 (67.2%)
Acute ischaemia	6 (15.0%)	15 (27.3%)
AAA	4 (10.0%)	3 (5.4%)

RESULTS

A total of 95 patients aged 70 years or over were studied. There were 55 males (58.0%) and 40 females (42.0%). The mean age was 75.8 years (range 70–100 years). Forty (42%) were managed conservatively according to the previous inclusion criteria. The other 55 patients were managed surgically and underwent a total of 63 vascular procedures to revascularise 72 limbs. Sixty seven (70.5%) patients presented with critical lower limb ischaemia, 21 (22.1%) with acute lower limb ischaemia and only seven (7.4%) with AAA. There were 43 (68.2%) primary reconstructive vascular procedures including eight aortobifemoral bypasses, 19 femoropopliteal bypasses, eight extra-anatomic proximal bypasses (five femoro-femoral and three axillobifemoral bypasses), four femoro-distal grafts and another four reconstructive vascular procedures of various types. Furthermore, 19 (30.0%) thrombo-embolectomies were carried out, in addition to one surgical angioplasty (1.8%). The latter 20 procedures were carried out under local anaesthesia. Although it was not a deliberate decision, both groups were statistically comparable regarding age and sex ($p = 0.42$). An aggressive approach was adopted for the acutely ischaemic lower limbs. In the surgical group, five patients needed a secondary vascular procedure, which was performed successfully. Our results in the revascularised group were very encouraging. The survival and limb salvage rates were statistically much better for the patients who received surgery than for those receiving conservative management ($p < 0.001$) using the chi square test. The frequencies of the two endpoints, namely amputation and death, are shown in Table 2. Overall, 19 amputations were deemed necessary. Among them, six above-knee amputations were performed after failure of limb salvage. The other 13 were done in the conservatively managed patients (12 above-knee and only one below-knee amputation).

DISCUSSION

As we approach the 21st century, the number of elderly people is expected to rise rapidly in the Gulf States and particularly in Saudi Arabia.⁷ This will be associated with a higher incidence of peripheral atherosclerotic vascular problems. As stated by Fries: "At the top of the list of nationally important health-research subjects must be the ability to postpone chronic illness, to maintain vigor,

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Table 2. The outcome in the conservative management and revascularisation groups

	Conservative management group (n = 40)	Revascularised group (n = 55)
Well	15 (62.5%)	44 (80.0%)
Amputation	13 (32.5%)	6 (10.9%)
Death	8 (20.0%)	4 (7.3%)
Lost to follow-up	4 (10.5%)	1 (1.8%)
Total	40 (100%)	55 (100%)

and to slow social and psychologic involution."¹¹ Progress in the care of the aged has traditionally been measured in terms of "quantity" of life, i.e., mortality and survival statistics. This is applicable in our series to management of AAA: three patients had repair of AAA with good results as they survived for three years, compared to the other four AAA patients managed conservatively who died within 18 months. In the follow-up of 251 patients for up to seven years after repair of non-ruptured AAA and 146 patients after repair of ruptured aneurysm, Naylor et al¹² found that, after successful operation, the life expectancy was not significantly different from that of the population at large, at least for the first four years, and, even beyond that, survival only diverges slightly. However, they advocated that surgery should not be withheld from the octogenarian on that basis only, as this is a matter of individual judgement.

This debate in the management of AAA in the elderly is not applicable to the second and majority group of patients in our series, namely critically ischaemic lower limbs, where progress is measured in terms of improvement in "quality" of life by analysing morbidity, disability and the need for institutionalisation. Maintenance of limb viability for ambulation and preservation of independence in the elderly is a principle consistent with these goals. Major amputation can have a devastating effect on the elderly in any society¹³ and more in developing countries with limited rehabilitation resources. Furthermore, it is considered by some societies as a stigma which will add a psychological aspect to the problem. It is well documented that an attempt at successful revascularisation

is more cost-effective than rehabilitating an amputee.^{14,15} In a large British cohort, only 10–15% of amputees achieved mobility around their homes, and only 5% were independent of a wheelchair.¹⁶ This problem in some developing countries is more complicated in elderly people who are eager to continue worshipping for the rest of their lives, as they cannot perform their prayers in their customary manner in mosques. In addition, our results, as shown in Table 1, demonstrated significantly lower rates of mortality and morbidity in the surgical group who had limb salvage procedures. With improved anaesthetic techniques, postoperative monitoring and sophistication and safety of vascular reconstructive procedures, we and others^{2,3,15,17} have extended our aggressive approach to limb salvage to include and consider all patients in the later decades of life for possible revascularisation.

Advanced age has often been considered a relative contraindication for limb salvage. This misconception still exists. In a recent study, Michaels and Galland⁹ sent a questionnaire to 100 general practitioners (GPs) in the Berkshire area of the U.K. They found over half of the GPs would not refer a 70-year-old with claudication at half a mile or an 80-year-old with claudication at 100 metres, and 44% would not refer an 80-year-old with a palpable AAA. This problem of referral pattern is worse in developing countries, where there is a lack of awareness of modern invasive techniques and the advances that have been made in anaesthesia and surgery for the elderly. In addition, further changes in detecting vascular cases earlier and referring them for proper management depend on active continuing educational programmes focused on the importance of recognising high-risk groups, particularly elderly diabetics.

In view of the low mortality and amputation rates in the revascularised group, an aggressive approach to arterial reconstruction is justified in elderly patients and indicates that advanced age alone should not be considered a contraindication for limb salvage. Results will improve if cases are referred earlier in the course of the disease.

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