

ONE-CENTRE STUDY INVESTIGATING A NEED FOR AN IMMEDIATE VASCULAR SURGERY IN PATIENTS OVER 80 YEARS OF AGE – COMPARISON ANALYSIS OF THE RESULTS

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According to the observation made by the study authors, every year there is an increasing number of patients advanced in years who require surgical management of their vascular disease. They constitute more than 4% of all patients. The similar situation is our medical centre, where the number of the hospitalisations of octogenarians increases with every subsequent year. In spite of many concomitant diseases we propose them immediate operation. Then it seems to be important a comparison two ways of treatment: immediate and elective ones.

The aim of the study was evaluation of the results obtained in the treatment of vascular diseases requiring an immediate surgical intervention.

Material and methods. In the years 2005-2007, there were 150 patients treated for arterial diseases. The group consisted of 87 men (58%) and 63 women (42%), with a mean age of 83.6. All the patients were divided into two groups: patients undergoing an elective surgery ($n = 113$), and those operated on immediately ($n = 37$). For both these groups was performed the comparison analysis, concerning the most important concomitant disorders, having an unquestionable influence on the final results of the operative treatment

Results. The comparison analysis of deaths, amputations, and hospitalisation period in the elective and immediate surgeries revealed the following: 5.3% vs 21.6% ($p = 0.006$), 7.9% vs 13.5% ($p = 0.33$), and 15.8 vs 9.8, respectively.

Conclusions. Immediate vascular surgery is especially needed by older women. Culture and customs are the reasons for treatment delay in Poland, with its direct effects on the treatment results.

Key words: surgery in octogenarians, vascular surgery in octogenarians, vascular disease in octogenarians

With an elongation of a mean life expectancy of our population, observed for about last two decades, there appears an increasing need for surgical management of different arterial pathologies in the group of patients over 80 years of age. According to the Polish statistical yearbook 2008, the mean life expectancy amounts to over 80 years in women and over 71 years in men. In the author's study centre, the number of the hospitalisations of octogenarians increases with every subsequent year. In 2005, it was only 51 patients (2.0%) from this age group that were hospitalised and

treated in our study centre, which admitted a total number of 2547 patients that year. In 2006, the number rose to 88 patients out of 2404 patients (i.e. 3.7%), and to 102 patients out of 2308 (i.e. 4.4%) in the year 2007. The increase can be observed in the subsequent years as well, not only in the group of patients with vascular pathologies, but also with other surgical pathologies.

Patients advanced in age constitute a unique group, with a revealed higher number of loads resulting from acquired systemic diseases, organ insufficiencies, previous sur-

geries, and other conditions. (1, 2). Those loads were the reason for frequent exclusions of this age group from large clinical studies investigating the results of the surgical intervention within different vascular pathologies (3). However, the experiences of the last years, gained by different study centres, have shown that the results of the surgical treatment in octogenarians are acceptable. A significant role in obtaining those results was played by technological advancement and development of intravascular treatment methods of different arterial diseases (4, 5, 6).

Arterial embolisms, symptomatic aortal aneurysms, critical limbs ischemia (because of atherosclerosis progression or by-pass occlusion) and advanced phase of limb necrosis with coexistence sepsis are the most common arterial diseases which should be treated faster.

Another problem is the severity of the disease: most of the cases are severe, as even the patients believe that they do not qualify for the procedures and they await 'natural solutions' – especially the patients in their nineties. This situation makes the decision about the surgical treatment extremely difficult; and sometimes the decision must be made immediately.

This work includes author's evaluation of the results obtained in the treatment of vascular diseases requiring an immediate surgical intervention.

MATERIAL AND METHODS

In the years 2005-2007, there were 7259 patients hospitalised and treated in our medical centre, 527 (7.2%) of which were over 80 years old. The reason for hospital admission in 241 cases (3.3%) was an aortic disease. A total number of 150 patients (2.1%) needed a

surgical treatment of the arteries. The remaining 91 cases underwent a conservative therapy.

Among 150 surgically treated patients, there were 87 men (58%) and 63 women (42%) in the age of 80 – 92 years, with a mean age of 83.6.

Of that group, 76 (51.7%) admissions to the hospital (51.7%) were emergent and the remaining 74 (49.3%) were elective. Immediate surgeries were performed in 37 cases (24.7%), and elective surgeries in the remaining 113 cases (75.3%). In that last group of patients, surgery was postponed for 2-4 days in 23 cases (15.3%), to prepare the patient optimally for the surgery, although the patient's admissions were immediate. The group of 37 patients (24.7%) requiring an immediate treatment included 11 men (29.7%) only. The rest of the group consisted of women. The type of pathology and the methods of its treatment are presented in tab. 1.

All the amputations were performed in patients with a long-lasting diabetes. They were shared into two groups (tab. 1). Amputations of peripheral parts of extremities (mainly fingers) we included to minor amputations. Mayor amputations concern limb, femoral, antebrachium and brachium amputations. The point "other" included patients with iatrogenic injuries of the femoral or iliac arteries, requiring arteriorraphy. In all cases, there was a puncture performed in order to conduct coronarography or coronary angioplasty.

Comparison of kinds of surgery and patients had emergent and elective surgery are shown in tab. 2.

In 15 patients of this group there were done additionally lumbal sympatectomy (espe-

Table 1. Types of pathology and the methods of its treatment

Pathology	Treatment modality	Number of patients	Total	%
Arteria embolism	femoral artery	5	12	32,4
	trzewna / brachial artery	4		
	/ visceral artery	3		
Abdominal and thoracic aorta aneurysm	stentgrafts	6	9	24,3
	clasical operations	3		
Critical ischaemia	endarterectomy	4	8	21,6
	recanalisation of the graft	4		
Limb necrosis	major amputation	2	5	13,5
	minor amputation	3		
Rother (iatrogenic)	arteriorrhaphy	3	3	8,1
Total		37	37	99,9

Table 2. Comparison of kinds of surgery and patients had emergent and elective surgery

Operation	Number of patients	%
Y-graft	4	3,5
Aorto(iliaco)-femoral by-pass (one side)	8	7
Femoral-popliteal by-pass	13	11,5
False aneurysm surgery	6	5,3
TEA ICA	28	24,7
Stent-graft of thoracic aorta	6	5,3
Stent-graft of abdominal aorta	10	8,8
Profundoplasty	8	7
Peripheral surgical angioplasty	11	9,7
Intravascular angioplasty	14	12,3
Hybrid angioplasty	5	4,4
Total	113	100

cially in patients from the last four groups). There were no primary amputations in this group.

All amputations (9 cases) were done because of unsuccessful revascularisation surgery.

As we can see in tab. 1 and 2 there is a significant difference between kinds of emergent and elective surgery in our patients.

Most of the patients were substantially loaded with the acquired chronic diseases. Ischemic heart disease was found in 21/37, past heart attack in 7/37, hypertension in 28/37, diabetes in 8/37, COPD in 7/37, and renal insufficiency in 10/37 patients. Before the study, 23/37 of the patients underwent different operative procedures within different surgical specialities. The treatment results obtained in the group of 37 immediately operated patients were compared with results of a group of 113 patients treated in the process of the elective surgery.

The comparison analysis was performed for both groups, concerning the most important

concomitant disorders, having an unquestionable influence on the final results of the operative treatment. The comparison is shown in tab. 3.

As it follows from the above presented table, a part of the patients had even a few concomitant disorders, influencing the treatment results.

Statistical significance of the results obtained in two compared groups was evaluated with the use of a Fischer test, for the percentage comparisons, with a significance level at $p = 0.05$.

RESULTS

Positive results of the surgical treatment were obtained in 29 (78.4%) patients. Eight patients (21.6%) died postoperatively. Cases, when minor amputations had to be performed also were treated as a positive result. There were no mayor amputations in this group. The reasons of deaths and number of amputations

Table 3. The most important concomitant disorders, having an unquestionable influence on the final results of the operative treatment

Pathology	Immediate s. n = 37	%	Elective s. n = 113	%	p
Ischemic heart disease	21	56,7	67	59,3	0,84
Myocardial infarction	7	18,9	24(3)*	21,2	0,76
Hypertension	28	75,7	90	79,6	0,64
Diabetes	8	21,6	47	41,6	0,03
COPD	7	18,9	20	17,7	0,87
Renal insufficiency	10	27,0	33	29,2	0,80
Past surgeries	23 (7)**	62,2	43 (17)**	38,1	0,01

* multiple infarction

** numerous surgical procedures

Table 4. Reasons of deaths and number of amputations in the form of a comparison with the group of 113 patients operated on in a elective procedure

Operacje / Surgeries	Immediate n = 37	%	Elective n = 113	%	p
Deaths	8	21,6	6	5,3	0,006
Amputations	5	13,5	9	7,9	0,33

are presented in tab. 4. in the form of a comparison with the group of 113 patients operated on in a elective procedure.

The most frequent cause of death in the group of immediately operated patients was an advanced vasogenic necrosis of the intestines, requiring a resection of a substantial part of the bowels. Metabolic disorders, infection and a subsequent multi-organ insufficiency caused death of 5 patients. In two cases, the cause of death was an increasing multi-organ insufficiency in the postoperative period. In one case, it was a progressive brain stroke that caused the patient's death. Mean hospitalisation time in the group of immediately operated patients was quite short and amounted to 9.8 days, while in the group of electively operated patients it was 15.8 days. Hospitalisation lengthening was a result of the preoperative period mainly: time needed for an optimal preparation of the patients to surgery, control of the most significant disorders resulting from the basic disease, as well as many concomitant diseases.

DISCUSSION

Qualifying patients over 80 years old for a surgical treatment has always been controversial, due to many loads present at that age, resulting from acquired diseases. Some of the authors even believed that the advanced age itself is a significant contradiction for surgery (A). However, the experiences of the last twenty years have revealed a need for such a treatment (that follows from a longer lifespan). The results of surgical procedures have also improved significantly.

Such an improval was thanks to the introduction of intravascular treatment methods, advancement in anaesthesiology and the perioperative care enabling the patients to pass that period safely (7).

Some of the vascular diseases are relatively common in the advanced age. They include i.a. stenoses of the carotid arteries,

symptomatic or asymptomatic, or the aortic aneurysms. Multiple trials revealed the benefits of a surgical treatment recanalising the carotid arteries in patients advanced in years. In some of the centres, this is the most frequently performed procedure.

There has also been much progress in the surgical treatment of the aortic aneurysms in older patients, due to the introduction of stentgrafts. According to the author's knowledge, stentgrafts are successfully used also in the case of a ruptured aneurysm. The procedure is not too invasive, there is a decreased blood loss, and the clamping of the aorta may be avoided – these are the main factors minimalising the risk of surgery in patients with multiple loads (9).

In order to improve the results of the surgical treatment, some authors propose a laparoscopic treatment of the aneurysms. This method limits the operative trauma but makes the time of the procedure much longer (8). Standard surgeries performed by experienced and specialised vascular centres also produce acceptable results (10, 11).

A slightly more difficult problem is posed by obstructed arteries in the lower limbs. The patients present usually too late for the treatment, as they await natural solutions to their conditions, connected with their age. Such a situation makes the immediate treatment obligatory and excludes a proper preparation, which in turn influences treatment results.

There is also a separate group composed of patients with an ischemic diabetic foot on admission. The group is regarded as a distinctive one due to infection concomitant to ischemia. Such a pathology requires an interdisciplinary approach. It should be pointed out, however, that all the amputations performed in this group (both major and minor ones) concerned the diabetic patients.

Other authors made similar observations: amputations, especially the minor ones, constitute a significant part of all cases (12).

Immediate vascular surgeries in patients advanced in age include first of all embolectomies within limbs and intestines, operations treating aneurysms of large arteries (ruptured and symptomatic ones), and critical limb ischemia with necrosis. These are the most severe conditions, from the point of view of vascular surgery, even in younger patients. In octogenarians they are often associated with other vascular metabolic diseases and organ insufficiency, which causes an additional risk for the surgical treatment. Due to the above mentioned circumstances of immediate vascular surgeries in that age group, the perioperative mortality is quite high and in our study it amounted to 21.6%. Higher fatality rate, of up to 64.7%, is observed in immediate surgeries of ruptured aortic aneurysms (13). The available literature presents many results of the surgical treatment of different conditions. However, there are no collective data that would include the results of the treatment of

all vascular diseases, in the setting of one centre, with a cardiovascular department on call 24/7.

CONCLUSIONS

1. A marked majority of patients over 80 years old, requiring immediate vascular operations, are women.
2. Significantly worse results obtained in the process of immediate vascular surgeries performed in the study group and expressed by the rate of amputations and the fatality rate, are due to the treatment delay. Most often, this is due to a patient disagreeing to the treatment and waiting for 'natural solutions'. This concerns mainly patients in their nineties.
3. Technological advancement and development of endovascular techniques significantly improved treatment results among patients over 80.

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