

**PRE AND POST-OPERATIVE FACTORS OF PROGNOSTIC IN THE ATHEROSCLEROTIC
ARTERIAL DISEASE OF THE LOWER LIMBS**

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Atherosclerosis is a progressive process which affects different vascular areas with varied clinical consequences, many times associated, mainly including coronary and cerebral ischemic ailments and last but not least of the peripheral arteries of the lower limbs. Depending on the severity of the modifications translated through arterial stenosis with the ischemia of the respective tributary areas, the symptomatology affects the quality of life in different degrees and represents the main cause of cardiovascular mortality. Usually, the ailment at the level of a vascular bed is not isolated, also existing, with a high probability, other ailments which must be detected. The peripheral arterial disease of the lower limbs is an independent predictor of the coronary and cerebral ischemic events and vice-versa.

The purpose of this research is to assess the characteristics of the patients who have benefited of a conservative treatment regarding the atherogen risk factors, treatment and the major coronary and cerebral ischemic complications, as well as the results and the evolution of the patients with a peripheral arterial disease with infra-inguinal localization in the IIIrd and IVth Fontaine stage, submitted to surgical treatment for symptomatic improvement and the extension of the amputation time. We have also proposed to evaluate, using the photoplethysmography method, the endothelial function at the elderly patients with BAMI and to establish if the post-occlusive hyperemia combined with the administration of alprostadil is a feasible method to identify the patients with a circulatory reserve which can allow a conservative treatment.

The results of the studies might be useful in the current medical practice, guiding the physicians in the selection of the patients and in taking medical decisions concerning the chosen therapeutic modality and of the situations which require the abstention from any modality of reconstruction.

From the results of the study *“The structure of the risk factors and the quality of the treatment at the patients with peripheral arterial disease of the lower limbs in the IInd Fontaine stage”*, ensues the fact that from the arsenal of the recommended medication for the secondary prophylaxis, only two out of three patients have benefited of anti-platelets, only half of statin and almost three out of four have benefited of inhibitors of angiotensin converting enzyme (IACE).

The correction of the modifiable cardiovascular risk factors is showing a deficit; quitting smoking achieves the biggest failure. The insignificant difference of the proportion of the smokers in the two sub-lots, even with coronary and cerebral co-morbidities, denote an insufficiency in measures which targets the modification of the lifestyle and maybe of the patients' compliance.

Among the risk factors, divided on genders, a significantly higher predominance of hypertension was found at women, the rest of the modifiable risk factors prevailing at men.

The comparative study for the capacity of prediction the post-surgery prognostic of the two scores, Finnvasc and modified Prevent III, within our study *“Predictors of postoperative outcome in patients with lower limb surgical revascularization”*, shows the fact that the Finnvasc score is more sensitive in the prediction of amputation and mortality as main purposes and can be used on its own in the prediction for the medium term (of one year).

We have made the proposal of including heart failure in the scores of risk, this manifesting itself as an independent factor of negative prognostic for amputation and mortality.

Atherosclerosis is a generalized process which most of the times affects multiple vascular areas, as it is also certified by the data of the presented study; the other limb is also frequently affected, the ischemic disorders having an aggravating progressive character, especially when patients do not follow with consistency the recommendations for treatment. Our study, during the year of observation after the revascularization procedure on one of the limbs, shows the fact that there were also registered procedures of revascularization on the contralateral limb in a proportion of 31% for bypass and 24% endovascular, which confirms the idea of the necessity to continue the measures of secondary prophylaxis.

Appreciating the negative post-surgery risk, (unfavorable result) is generally of a primordial practical importance in the revascularization surgery, especially at the patients with critical ischemia of the lower limbs, because it helps the clinician to take a decision towards one of the revascularization procedures or towards amputation; it also creates an uniform system of appreciating this risk and of comparing the results, as well as it avoids the waste of energy and material resources. The proposal of using a single score, by means of its good predictive capacity, proven by our research, facilitates the algorithm of practical decision.

Through the study, *“Assessment of post-occlusive reactive hyperemia after alprostadil challenge test in the evaluation of endothelial function in elderly patients with lower extremity artery disease”*, we have proposed to evaluate, using photoplethysmography, the endothelial function at elderly patients with peripheral arterial disease of the lower limbs and to recommend the post-occlusive hyperemia combined with the administration of alprostadil as a method of identifying the patients with circulatory reserve which can allow a conservative treatment.

The photoplethysmography of the hallux is a less expensive, non-invasive procedure, capable to appreciate the variations of the blood flow as a response to ischemia in the context of post-occlusive hyperemia. We consider it as a method capable to help the practitioner in taking an appropriate therapeutic decision even if presently a consensus concerning the diagnosis value of the post-occlusive reactive hyperemia does not exist. At the basis of the technology of photoplethysmography are a few opto-electronic components: a source of light for the illumination of the tissue (for example the skin), and a photoelectric cell in order to measure the small variations of the light's intensity, associated to the changes of perfusion reflected in the volume of capture.

Thus we can conclude the fact that:

- Concerning the arterial disease of the lower limbs in the IInd Fontaine stage, our data are superposed with the great published studies; the therapy entails improvements by means of extending the treatment with anti-platelets, statins and inhibitors of the angiotensin conversion enzyme, being distinguished the population with coronary or cerebral vascular co-morbidities to which the treatment is better conducted. The incidence of the coronary and cerebral vascular events might be reduced by means of the intensification of the measures of correction of the factors of risk, respectively by means of measures of sanitary education and of the medicine treatment.
- The measures of secondary prophylaxis are strongly recommended as means of extending survival, slowing down the atherosclerosis, and in other areas, inclusively the protection of the lower limb which is unsubmitive to revascularization.
- In the stage of critical ischemia of the lower limbs, the modified Prevent III score was the least effective to our patients' specific, the Finnvasc score being more sensitive on a medium term prognostic, especially concerning the risk of amputation and mortality. Our opinion is that the Finnvasc score can be used independently for the evaluation of the post-surgery prognostic. The conservative therapy, as an alternative solution, should be taken into consideration at the patient with high Finnvasc scores.
- The heart failure is an independent prognostic factor, referring to the risk of amputation and death, which might be included in a modified score to the existing ones.
- The role of the microcirculation in the evolution of the critical ischemia of the lower limbs treated conservatively, or in the survival without the amputation of the re-vascularized limb, seems decisive. The determination of the reactive post-occlusive hyperemia and the tests with alprostadil can be considered as accessible methods and also less expensive, which can help the practitioner to take appropriate therapeutic decisions. The long-term careful directly observed therapy will be able to decide subsequently, the moment of the revascularization's indication.

Key words: peripheral arterial disease, atherosclerotic risk factors, prediction scores, heart failure, photoplethysmography, post-occlusive reactive hyperemia.