LONG-TERM PROGNOSIS OF POLYVASCULAR PATIENTS WITH ASSOCIATED CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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LONG TERM PROGNOSIS OF POLYVASCULAR PATIENTS WITH ASSOCIATED CHRONIC OBSTRUCTIVE PULMONARY DISEASE (Abstract): Objective: To evaluate by various tools the prognosis of the polyvascular patients (defined as the presence of more than one affected vascular bed), who also associate chronic obstructive pulmonary disease. Material and methods: Fifty-eight patients discharged after an episode of acute cardiorespiratory failure were examined at 3 month-intervals for 1, 2 and 3 years (2010-2012). The following were performed: physical examination, biochemical and hematological tests, spirometry, electrocardiography, transthoracic echocardiography, brain computer tomography or magnetic resonance imaging. All patients in our study were smokers with chronic pulmonary obstructive disease. Treatment relied on the European recommendations for cardiac pathology and associated medical conditions. Results: A favorable clinical course was noticed in compliant patients. Patients with metabolic syndrome and/or old stroke, and peripheral arterial disease have a poor prognosis. A strong link seems to exist between systolic function of the right ventricle and cardiovascular mortality. The association of this condition to ischemic heart disease modifies the right ventricle hemodynamics. Conclusions: Polyvascular patients in acute cardiorespiratory failure have a mortality of 36% in the first 3 weeks. After 3 years, 86% of the patients survive. The modern methods of diagnosis and treatment allow improving the quality of life and increasing its duration. Key words: MYOCARDIAL ISCHEMIA, STROKE, PERIPHERAL ARTERIAL DISEASE.

Polyvascular disease is currently defined as a simultaneous clinical impairment of two or three arterial territories (coronary, cerebral or peripheral). As PRISMA survey shows, despite the educational measures aimed at changing lifestyle and therapeutical attitude, polyvascular patients still have a poorer control of serum cholesterol levels (1). In REACH registry (2) 68,000 vasculopathic patients were monitored for two years. Investigators found that in the polyvascular patients the carbohydrate and lipid metabolism were more difficult to control. Also, 2-year cardiovascular events were twice as frequent in polyvascular as monovascular patients. Importantly, only one of six patients had symptoms, hence the need for proper assessment of vascular damage. The same study shows that in polyvascular patients, revascularization rate was two
times higher.

Our study followed for three years (2010, 2011, and 2012) the disease course of a group of 58 polyvascular patients admitted to hospital in 2009 in critical condition after an episode of acute cardiorespiratory failure on the background of chronic respiratory disease. The systolic dysfunction of right ventricle was associated with more frequent cardiovascular events.

**MATERIALS AND METHODS**

The study included 58 patients, 34 males and 24 female. Patients’ age at the beginning of the study ranged between 52 and 82 years. We performed a spirometry on all patients, when included in the study. This method established the stage of the chronic obstructive pulmonary disease (according to the GOLD criteria – Global Initiative for Chronic Obstructive Lung Disease). The recommended treatment for chronic respiratory disease consisted of: inhaled parasympaticolytics (Tiotropium 18μg), association of inhaled sympathomimetics and corticosteroids (50 μg Salmeterol / Fluticasone 125-500 μg), Theophylline retard 350mg and oxygen therapy at home, 4-6 l / min, 6-8 hours / day, intermittently if the patient is GOLD stage IV.

All patients were subjected to cardiovascular assessment: immediate blood pressure measurement in supine position in both arms and in standing position, and 5 minutes later in orthostatic position, cardiac auscultation, palpation and auscultation of carotid and subclavian arteries, abdominal aorta, renal, femoral, and popliteal arteries, pulmonary auscultation, jugular inspection, detection of hepato-jugular reflux and lower limbs edema.

Resting electrocardiogram was performed with a Heart Screen HS60G device for all patients, every 3 months during the three follow up years. Right and posterior chest leads were also used. Transthoracic echocardiography was performed with a Fukuda Denshi UF-850 XTD echocardiograph. Peripheral arterial damage was confirmed by arterial Doppler, while the evaluation of cerebral complications was studied with brain computer tomography or magnetic resonance imaging.

For cardiovascular diseases, the patients received dual antiplatelet therapy (Aspirin 75mg and Clopidogrel 75 mg) as recommended by CHARISMA study (3,4), statins (Atorvastatin 40-80 mg, dosage varying according to patient’s tolerance, muscle mass and the degree of nitrogen retention), cardioselective beta-blockers (5-10 mg Nebivolol, Carvedilol 12.5 mg), angiotensin converting enzyme (Perindopril 5-10 mg) or sartan (Telmisartan 40-80 mg), fixed drug combinations (Perindopril 5 mg /Indapamide 1.5 mg), combination of diuretics (Furosemide 20 mg + Spironolactone 50 mg) - in congestive heart failure.

**RESULTS**

In regards to chronic obstructive pulmonary disease, seven patients (12%) were in GOLD stage II, 14 patients (24%) in GOLD stage III, and 37 patients (62%) in GOLD stage IV.

Forty-seven patients (82%) were diagnosed with arterial hypertension, 6 patients (10%) with orthostatic hypotension, and the latter requiring special therapeutic attention upon prescribing hemodynamically active medication. Baseline congestive heart failure features were found in 20 patients (34%). Pathological heart murmurs were detected in 45% of patients (26 patients).

Biochemical test results revealed that the polyvascular patients more frequently
presented mixed dyslipidaemia (higher total serum cholesterol and triglycerides levels), this feature being due to the frequent association of metabolic syndrome in the patients with this condition (2).

The most common electrocardiographic finding was ST depression and negative T waves, consistent with changes suggesting trivascular coronary disease (37 patients, 35%). The remaining patients showed electrocardiographic features characteristic of myocardial necrosis (myocardial infarction in chronic stage). Right ventricular ischemic injury was revealed for 80% of the patients by the changes in right chest leads, and supported by the echocardiographic changes. Special attention was given to echocardiographic exploration of the right ventricular damage (right ventricular parietal kinetics, M-mode tricuspid annulus systolic motion, systolic pulmonary flow acceleration time, pulmonary artery systolic pressure). Perhaps, the more common association of right heart ischemia in polyvascular patients is due to hemodynamic overload induced by chronic obstructive pulmonary hemodynamic.

Echocardiographic examination of the left ventricle revealed ischemic dilated cardiomyopathy in 35 patients (60%), segmental parietal kinetic changes in 20 patients (35%), and isolated diastolic dysfunction in 3 patients (5%). Cardiac murmurs, detected at physical examination in 26 patients (25%) were confirmed echocardiographically as being mild or moderate, mitral and/or aortic valvular disease.

Peripheral arterial Doppler detected critical stenosis in 40 patients (70%), and features of atheromatosis without stenosing lesions in 15% of patients (9 patients). Cerebral arterial damage - old ischemic stroke - was detected in 38 patients (65%).

Interventional and/or surgical myocardial revascularization was required by 30% of patients (17 patients); 45% of patients underwent aorto-femoral bypass.

Vascular pathology in the study group was associated with 2 or 3 arterial territories (fig. 1).

Long-term prognosis was marked by an increased rate of cardiovascular events in patients with peripheral arterial disease (23 patients, 41%) after the 3 follow up years.

It is worth mentioning that arterial, myocardial, or peripheral revascularization was required at baseline by 16 patients; the other 10 patients underwent revascularization 3 to 25 months from baseline.
The incidence of metabolic syndrome in the study patients was observed in 49 patients (85%); diabetes mellitus was diagnosed in 46% of patients (26), and diabetic nephropathy was confirmed in 27% of patients (15). These three conditions associated with polyvascular disease in our study patients fed a poor prognosis (fig. 2).

![Fig. 2. The incidence of unfavorable prognostic factors in polyvascular patients](image)

At the end of the 3 year follow-up, the cardiovascular mortality was of 14% (8 patients: 5 by acute myocardial infarction and 3 by stroke).

**DISCUSSION**

As noted by Criqui et al (5), peripheral arterial disease is an early indicator of cardiovascular mortality. In our study, the polyvascular patients with peripheral arterial disease presented an increase in the severity of coronary or cerebral ischemic pathology, requiring sustained therapeutic intervention.

In 2009, Deepak et al (6) published the results of CRUSADE registry, which enrolled 111,972 patients with polyvascular disease. They reported that polyvascular patients have a higher risk for cardiovascular events compared with monovascular patients. It is necessary that we continue this study by comparing the frequency of cardiovascular events in monovascular versus polyvascular patients.

Steg et al (7) participated in REACH study. They noted, like Deepak, that polyvascular patients have a higher risk for cardiovascular events than monovascular patients, since the first year of medical monitoring.

**CONCLUSIONS**

Our study concluded that polyvascular patients with systolic dysfunction of the right ventricle (80%) had a worse long-term prognosis than those without this dysfunction (20%). Even affected by right ventricle disease, our patients had a survival rate of 86%, 3 years after the study. The high survival rate is due to the modern
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methods of diagnostics and treatment, which were applied on our patients for both cardiorespiratory diseases (medical, interventional and surgical). In addition, we remarked an improvement of the quality of life for the patients in our study.

REFERENCES


SMOKING AND THE RISK FOR DEMENTIA

Smoking is a possible risk factor for dementia. A new cohort study examined the association between smoking history and cognitive decline in early old age. The cognitive function was investigated using a series of 5 tests (memory, vocabulary, executive function composed of 1 reasoning and 2 fluency tests). The assessment has been made regularly for a 10 years period. For middle-aged men, the results show that the faster cognitive decline (in global cognition and executive function) was observed among current smokers compared with never smokers. For ex-smokers, with at least a 10-year cessation, the decline in executive function was similar to that among never smokers. The rate of cognitive decline among women was not affected by smoking. These new research showed that middle-aged male smokers are more likely to have a faster cognitive decline (Séverine Sabia, Alexis Elbaz, Aline Dugravot et al. Impact of Smoking on Cognitive Decline in Early Old Age The Whitehall II Cohort Study. Arch Gen Psychiatry. 2012; 69(6):627-635).

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