

NEUROLOGICAL MANIFESTATIONS AND THEIR PREDICTIVE RISK FACTORS IN CORONARY ARTERY BYPASS GRAFT SURGERY WITH EXTRACORPOREAL CIRCULATION (Abstract)*. Thesis. São Paulo, 1994.

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This study reports the leading neurological manifestations subsequent to a coronary artery bypass surgical procedure (CAPS) with attending extracorporeal circulation (ECC). The predictive risk factors for these changes are also reported.

Eighty-eight subjects submitted to a coronary artery bypass surgical procedure with extracorporeal circulation at the Instituto do Coração da Faculdade de Medicina da USP were included. A total of 22 (25%) subjects displayed neurological changes. Twelve patients (13.6%) presented encephalopathy, 9 (10.2%) presented a peripheral neuropathy, 4 (4.5%) presented an ischemic stroke and 1 (1.1%) patient presented seizures.

A total of 86 distinct pre-, intra- and post-operative variables were examined to determining risk factors for the emergence of neurological complications. In order to assess all possible risk factors, the 22 subjects with a documented neurological dysfunction were added to 2 deceased subjects and these 24 subjects were compared to the complication-free group of subjects. Four subjects with a diagnosis of isolated peripheral neuropathy were included in the complication-free group in order to assess the actual risk factors for CNS complications. Thirty-four subjects sustaining a decrement of one or more points in the MMS score were compared with 51 subjects without any decrement in the MMS. Additionally, 11 subjects sustaining a decrement of 3 or more points in the MMS score were compared to 74 subjects without any decrement in the MMS. Moreover, the association of an altered MMS score and/or other neurological changes were assessed in order to evaluate the presence of a nervous system dysfunction.

The risk factors that were associated with the presence of neurological complications in a statistically significant fashion were: low educational background, previous ischemic stroke, changes in the pre-operative systolic and diastolic measures of arterial blood pressure, a previously altered MMS score, prolonged extracorporeal circulation time and a decreased blood flow through the ECC perfusion pump.

Multivariate logistic regression analysis demonstrated that assessment of bilateral carotid artery pulse or carotid murmur were not predictive factor for neurological complications. It also demonstrated that low educational background, a low pre-operative MMS score, prolonged ECC time and elevated pre-operative hematocrit count did show a predictive value for the emergence of neurological changes in subjects undergoing a coronary artery bypass surgical procedure with extracorporeal circulation.

The low educational background, altered pre-operative MMS score, the presence of a heart murmur and history of a previous ischemic stroke were predictive for a lower MMS score. Previous history of ischemic stroke and subjective complaints of disordered sleep displayed to be predictive for neurological changes and/or a decreased MMS score in subjects undergoing a coronary artery bypass surgical procedure with its accompanying extracorporeal circulation.

Additionally, it was concluded that cardio-thoracic surgery and extracorporeal circulation procedures must be monitored by neuropsychological tests and neurological exams performed by a neurologist, both performed in a successive fashion in order to assess the success of the CAPS. Moreover, most of the neurological changes are totally reversible and benign in nature displaying a good prognosis.

KEY WORDS: coronary artery bypass graft surgery with extracorporeal circulation, neurological manifestations, predictive risk factors.

*Manifestações neurológicas e seus fatores preditivos na cirurgia de revascularização do miocárdio com circulação extracorpórea (Resumo). Tese de Doutorado, Faculdade de Medicina da Universidade de São Paulo (Departamento de Neurologia). Orientador: Paulo Eurípedes Marchiori.

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