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109410

MODALITY: E-POSTER YOUNG RESEARCHER - NON-CASE REPORT
CATEGORY: PHYSIOTHERAPY

TITLE: PREDICTORS OF FUNCTIONAL STATUS IN THE IMMEDIATE POSTOPERATIVE PERIOD OF CARDIOVASCULAR SURGERY

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INTRODUCTION: Patients in the postoperative period (PO) of cardiovascular surgery (CS) may have reduced functional status during hospitalization. However, little has been studied regarding preoperative, intraoperative and PO factors that may be related to better functionality at the time of discharge from the intensive care unit (ICU). **OBJECTIVE:** To identify pre, intra and PO predictors of functional status of patients under PO of CS. **METHODS:** Retrospective cross-sectional study. Data from 614 patients was obtained from the Physiotherapy Service database (stored in REDCap) and reviewed in medical records of the Instituto Nacional de Cardiologia (Rio de Janeiro-RJ), from October/2018 to March/2020. Preoperative variables such as age, sex, body mass index (BMI) and comorbidities were collected. Intraoperative variables were: type/complexity of surgery, fluid balance, time on cardiopulmonary bypass, time of aortic clamping, and surgical complications. The variables evaluated in the PO were: level of consciousness, pain on admission, fluid balance, imaging tests, blood gases, laboratory tests, mechanical ventilation and pulmonary function before and after extubation, peripheral muscle strength, extubation attempts and failures. Functional status was quantified at ICU discharge using Functional Status Score for the ICU (FSSICU). The univariate and multivariate linear regression model ($P < 0.05$ considered significant) was used to verify the association of possible predictors of functional status. **RESULTS:** The PO variable: obesity ($BMI \geq 30 \text{ kg.m}^{-2}$; $\beta = -2.8$; CI: $-5.4 - 0.3$; $P = 0.026$) was negatively associated with functional status in the ICU; while the postoperative variables: pain on admission ($\beta = 11.2$; CI: $1.8 - 20.5$; $P = 0.02$) and peripheral muscle strength at discharge ($\beta = 0.3$; CI: $0.2 - 0.4$; $P = 0.001$) were directly and independently associated with functional status at discharge; Furthermore, muscle strength at the time of extubation were directly and independently associated with strength at discharge ($\beta = 11.1$; CI: $0.1 - 0.2$; $P = 0.007$). **CONCLUSION:** Pain intensity on admission and peripheral muscle strength at ICU discharge predict functional status at discharge, while muscle strength at the time of extubation was evidenced as an independent predictor of muscle strength at discharge, and a suggestive intervention target for preventing functional status loss in adults submitted to cardiac surgery.

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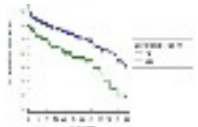
MODALITY: E-POSTER YOUNG RESEARCHER - NON-CASE REPORT
CATEGORY: HEMODYNAMICS AND INTERVENTIONAL CARDIOLOGY

TITLE: IMPACT OF SMALL STENT DIAMETER IN PATIENTS WITH ST ELEVATION MYOCARDIAL INFARCTION

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Introduction: In patients submitted to elective percutaneous coronary intervention (PCI), treatment with small stents diameters (SD) has been associated with worse outcomes. However, the impact of small SD on outcomes in patients with acute myocardial infarction in scarce. **Methods:** This was a prospective cohort study that included patients with STEMI submitted to pPCI admitted to a tertiary university hospital between April 2011 and December 2021. Patients were categorized into groups based on SD. Small SD was considered $< 2.50 \text{ mm}$. Patients who underwent implantation of multiple stents were assigned to the study group according to the smallest stent size used. The primary clinical outcome was major adverse cardiovascular events (MACE) defined by death, in-hospital MI, stroke, and stent thrombosis and target vessel revascularization. Secondary outcomes included MACE and each individual outcome at in-hospital, 30 days and long-term period. **Results:** From 1458 Patients admitted with STEMI in the study period, 1238 were included and 468 (34.4%) were women. Mean age was 63.4 ± 12.8 years in small stent diameter vs 60.4 ± 11.7 years ($p = 0.009$). Patients with small SD had a higher prevalence of diabetes ($36.9 \times 25.3\%$, $p = 0.003$) and previous acute myocardial infarction ($11 \times 17\%$, $p = 0.04$). In multivariate analysis, stent diameter $< 2.5 \text{ mm}$ remained independent predictor of MACE (odds ratio [OR] 1.6 95% confidence interval [95% CI] 1.08-2.42; $p = 0.018$); mortality (OR=1.78, 95%CI = 1.092-2.878; $p = 0.018$, and target vessel revascularization (OR=1.963; 95%CI= 1.019-3.612; $p = 0.036$) **Conclusion:** In this prospective cohort study of patients with STEMI treated with PCI, a small stent diameter $< 2.5 \text{ mm}$ was associated with increased rates of MACE, mortality and target vessel revascularization.



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MODALITY: E-POSTER YOUNG RESEARCHER - NON-CASE REPORT
CATEGORY: CARDIORESPIRATORY PHYSIOLOGY/ BASIC SCIENCE

TITLE: RESISTANCE TO OBESITY PROMOTES METABOLIC ALTERATIONS AND CARDIAC HYPERTROPHY WITHOUT CHANGES IN THE REACTIVE OXYGEN SPECIES

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Resistance to Obesity is associated with the complex interaction of stringent and environmental factors, conferring the ability to gain mass gain and body fat deposition, even when eating high-calorie diets. Considering that there are numerous gaps in the literature on the metabolic processes that explain Resistance to Obesity, specifically in relation to oxidative stress, the purpose of the study was to investigate whether obesity-resistant rats develop elevated reactive oxygen species in cardiac tissue. Wistar rats ($n = 71$), aged 30 days, were initially randomized into two groups: a) Standard diet ($n = 35$) and b) High-fat diet ($n = 36$). The experimental protocol consisted of two moments: obesity induction (4 weeks) and characterization of resistance to obesity (10 weeks). After obesity detion, the animals were redistributed into three groups: Control (C), Obese (Ob) and Obesity-Resistant (ROb). Was analyzed: Nutritional profile, metabolic changes, cardiac mass and Oxidative stress. The comparison of the experimental groups was performed using ANOVA, complemented with Tukey's multiple comparisons test. The level of significance considered was 5%. Body mass showed a significant difference between the standard diet and high-fat diet groups in the 4th week of the experimental protocol, characterizing obesity. In the 4th week, after the characterization of Resistance to Obesity, there was a significant difference in body mass between groups C, Ob and ROb. Ob and ROb groups showed a significant increase in caloric intake ($p < .001$, $p = 0.005$) in relation to the C. Ob group showed a significant increase in final body mass ($p < .0001$, $p = 0.03$), in retroperitoneal fat pad ($p < .0001$, $p = 0.06$), sum of corporal fat deposits ($p < .0001$, $p = 0.02$) and in reactive oxygen species ($p = .001$, $p = 0.006$), in relation to groups C and ROb. The area under the glycemic curve ($p = 0.02$), insulin resistance index (HOMA-IR) ($p = 0.02$) and basal glucose ($p = 0.01$) were elevated in the Ob group in relation to the C. Resistance to Obesity also promoted an increase in HOMA-IR when compared to C. Total cardiac mass ($p = 0.004$ and $p = 0.01$), right ($p < .0001$, $p = 0.02$) and left ventricles ($p = 0.002$, $p = 0.03$) the cross-sectional area ($p < .0001$, $p = 0.001$) and cholesterol levels ($p = 0.001$, $p = 0.01$) in were significantly elevated in the Ob and ROb groups compared to the C group. In conclusion, Resistance to Obesity promotes metabolic alterations and cardiac hypertrophy without changes in reactive oxygen species.

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MODALITY: E-POSTER YOUNG RESEARCHER - NON-CASE REPORT
CATEGORY: ATHEROSCLEROSIS/ CARDIOVASCULAR RISK FACTORS/ CARDIOVASCULAR PREVENTION

TITLE: COPPER OVERLOAD CAUSES A REDUCTION OF VASCULAR REACTIVITY IN DIABETIC RATS

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Introduction: It is a known fact that diabetes mellitus is associated with several cardiovascular abnormalities such as increased arterial stiffness and endothelial dysfunction. In addition to these changes, enhanced plasma copper concentration is also characteristic in individuals with diabetes. Although there are theories that the increase in plasma copper concentration and the development of cardiovascular problems are related, to date the mechanisms that explain this correlation are still unclear. **Objective:** The present study seeks to understand the effects of chronic copper overload on vascular reactivity in isolated segments of the thoracic aorta of diabetic rats. **Methodology:** This is an experimental study, in which about 44 12-week-old Wistar rats were used, weighing approximately 200g, obtained from the central vivarium of Federal University of Espírito Santo (UFES). The experimental protocols were approved by the university's animal use ethics committee No 22/2019. The animals were divided into four experimental groups: Control (CT), Copper (Cu), Diabetes Mellitus (DM), Diabetes Mellitus + Copper (DM+Cu). Type 1 diabetes was induced via a single injection of streptozotocin 50 mg/kg i.v. , and the animals were treated with twice the recommended daily dose of copper (1.8 mg/kg). They were then killed after 30 days of treatment, and the thoracic aorta was removed for vascular reactivity experiments. Statistical tests, one-way and two-way ANOVA were used to examine the outcomes. **Results:** The main findings show a reduction in vascular reactivity in the DM+Cu group. Using an inhibitor of nitric oxide synthase (L-NAME), an increased bioavailability of nitric oxide was suggested, explaining the vasodilation; employing an inhibitor of NADPH oxidase activity (Apocynin) and an enzyme that degrades hydrogen peroxide (Catalase) we showed the participation of hydrogen peroxide as a vasodilator factor; the potassium channels blockade (tetraethylammonium) suggests the participation of the channels for potassium as vasodilators; and the use of selective angiotensin II AT1 receptor antagonists (Losartan) suggests that angiotensin II could be acting on AT2 receptors as vasodilators. **Conclusion:** Copper overload in diabetic rats causes a reduction of the aorta vascular reactivity of, which can be explained by the action of nitric oxide, hydrogen peroxide, and potassium channels, which are potential vasodilators, thus explaining the mechanism of our main discovery.