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PREDICTORS OF REHOSPITALIZATION IN PATIENTS WITH HEART FAILURE IN A TERTIARY PUBLIC HOSPITAL IN BRAZIL

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Background: Heart failure is the major cause of cardiovascular morbidity at hospitals. Despite its relevance, there are few studies on Latin America about predictors of rehospitalization in patients with heart failure.

Objective: Describe the characteristics of patients hospitalized with heart failure in a tertiary public hospital in Brazil and identify factors related to hospital readmissions and emergency visits in 30 days.

Methods: We conducted a historic cohort study using secondary data, which included 2070 hospitalized patients with heart failure identified by Charlson Comorbidity Index (CCI) in 2009 and 2010. We collected demographic data, performance measures and hospital outcomes.

Results: There was, on the whole sample, a high median CCI (5.0) and a long hospital stay (14 days), with 13% of hospital death rate and 8% of readmission. Cerebrovascular disease (RR:1.63; IC95%:1,12-2,36; p=0,01), a higher CCI (RR:1,09; IC95%:1,02-1,16; p=0,02) and a shorter length of stay (RR 0,95; IC95%:0,94-0,97; p<0,001). Readmissions and emergency visits in 30 days was higher in patients with an increased Charlson Comorbidity Index and lower in patients with an increased length of stay.

Conclusions: Hospitalized patients with HF in Brazilian public hospital setting have higher morbidity and mortality rates when compared to international literature. Shorter hospital stay and higher Charlson Comorbidity Index were predictors of hospital readmissions and emergency visits in 30 days.

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EFFECTS OF AEROBIC AND RESISTANCE EXERCISE ON VASCULAR REACTIVITY AND ENDOTHELIAL PROGENITOR CELLS IN PATIENTS WITH TYPE 1 DIABETES MELLITUS

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Introduction: Circulating levels of endothelial progenitor cells (EPC) were shown to be a surrogate marker of endothelial function. Little is known about the effect of exercise on these variables in patients with type 1 diabetes mellitus (T1DM).

Objective: To evaluate the acute effect of aerobic exercise (AER) and resistance exercise (RES) on blood flow, reactive hyperemia, vascular resistance and release of EPCs in patients with T1DM.

Methods: Twelve patients with T1DM (30 ± 5 yrs, HbA1c 7.9 ± 0.8%) randomly performed 40 min of AER session (60% peak oxygen consumption, VO2peak) and RES session (60% one repetition maximum; 4x12 reps, 90-sec rest), on different days. Venous occlusion plethysmography (forearm blood flow, FBF and reactive hyperemia) was performed before and after the sessions. Venous blood was collected before and 10 minutes after the sessions for separation of the mononuclear cells (Ficol-HiPaque). Endothelial progenitor cells were quantified by flow cytometry (CD34+/KDR⁻). International Physical Activity Questionnaire was used to assess the level of habitual physical activity and calculate energy expenditure of participants.

Statistics: Two-way ANOVA and Pearson correlation. Results: Forearm blood flow and vascular resistance were not changed by both exercise protocols (P=0.80; P=0.73, 2-way ANOVA). Reactive hyperemia increased by 30% after AER and 36% after RES (P<0.001); with no difference between the exercise protocols. There were no changes in the proportion of EPCs after AER (0.046 ± 0.081% vs. 0.046 ± 0.078%, P=0.12) and RES sessions (0.025 ± 0.043% vs. 0.023 ± 0.035%, P=0.14). Energy expenditure and VO2peak were not correlated with blood flow, vascular resistance and reactive hyperemia. Age was correlated with the response of reactive hyperemia after AER (r=0.61, p=0.03), but not after RES (r=0.39, P=0.21).

Conclusion: A single session of AER and RES increases reactive hyperemia, independently of changes in FBF and circulating EPCs in patients with T1DM. We underscore that such acute effects of lower-limb exercises may contribute to systemic vascular adaptation induced by regular exercise training. The unchanged number of EPCs after both exercise protocols might indicate an inability of the bone marrow to release more EPCs after an stimulus.

Support: CNPq, CAPES, FIPE, FAPERGS

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EFFECTS OF ABDOMINAL PRESSURE DYNAMICS ON MODULATION OF LOWER LIMB VENOUS RETURN IN HEALTHY SUBJECTS AND PATIENTS WITH HEART FAILURE

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Respiratory muscles have modulatory effects on lower limb venous return in healthy controls (CTRLs), it is unknown whether this exists in heart failure patients (HF_{patients}).

Aim: To assess effects of diaphragm breathing (DB) compared to ribcage breathing (RB) at rest (AR) and during knee-extension exercise (KEE) in femoral venous, arterial blood flow (Q_{fv}, Q_{av}) and central hemodynamics in CTRLs and HF_{patients}.

Methods: In ten CTRLs and nine HF_{patients} esophageal and gastric pressure (Pga) were evaluated to estimate intrathoracic and abdominal pressure. During RB, subjects inhaled using ribcage muscles (ΔPga ≤ 5 cmH₂O), and DB (ΔPga ≥ 6 cmH₂O). Q_{fv} and Q_{av} were measured using ultrasound Doppler; Stroke Volume (SV) and Systemic Vascular Resistance (SVR) using impedance cardiography. Subjects alternated between RB and DB for 5-min periods AR and during low and moderate KEE. Randomized breathing was performed by reversing trial order.

Results: Q_{fv} and SV in CTRLs were higher in DB than RB (Q_{fv}=0.11±0.02; 0.06±0.008 L/min, P ≤ 0.05; SV=53±4; 45±4 ml, P ≤ 0.05). In HF_{patients} Q_{fv} and SV were not significant, but SVR was higher in DB than RB (SVR=2558±143; 2328±131 d.s/cm⁵, P ≤ 0.05). SV correlated with ΔPga in DB CTRLs (r=0.93, P ≤ 0.05). Low KEE in CTRLs: increased Q_{fv} in RB and DB compared to AR (Q_{fv}= 0.26 ± 0.04; 0.08 ± 0.01 l/min, P ≤ 0.05; Q_{av}= 0.28 ± 0.1; 0.09 ± 0.02 l/min, P = 0.01), and SV in DB versus RB (SV=56.6±3.5; 49.5±4.5, P ≤ 0.05). Low KEE in HF_{patients}: increased SV in RB versus DB (SV=51±4; 45.7±3.5, P ≤ 0.05), and correlated SV and ΔPga (r=-0.76, P ≤ 0.05). Moderate KEE in HF_{patients} increased Q_{fv} in DB (Q_{fv}=0.29 ± 0.07; 0.17 ± 0.03 l/min, P ≤ 0.05). Q_{av} increased in DB versus RB (Q_{av}= 0.236 ± 0.7; 0.11 ± 0.04, P = 0.05), SV increased in RB versus DB (SV=51±4.5; 45±4.5, P ≤ 0.05) and SVR increased in DB versus RB (SVR= 2041±141; 1837±77, P ≤ 0.05).

Conclusions: In CTRLs, modulatory effects on venous return depended on abdominal pressure dynamics. HF_{patients} showed lower SV and higher systemic vascular resistance during KEE and DB.

Support: FAPERGS, FIPE/HCPA and CAPES

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AUTONOMY IN PEDAGOGICAL ACTION: AN ESSAY ON METHODOLOGICAL ISSUES OF TEACHING-LEARNING AND TEACHER-RESEARCHER TRAINING IN HEALTH SCIENCES

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Background: Continuing education is based on four pillars: learning to know, learning to do, learning to live together and learning to be (Delors, Jacques; UNESCO Report: 1996). Discussing autonomous learning methods in operational situations that aim at teacher/student training in health-related degree courses in the XXI century is one of the current challenges of teaching and educational institutions.

Method: Advisory descriptive bibliography of current pedagogical actions, formatted as theoretical references on Health Sciences education and training, during multidisciplinary subject-matter studies in the FAMED-UFRGS Graduate Program in Cardiology and Cardiovascular Sciences.

Results: Underlying the baseline for pedagogical actions, one finds that learning to think or encouraging critical thinking on facilitating learning has its theoretical guidelines in the Brazilian law; however, on the surface, that is, operationally, mainstream education is traditional, and change depends upon a personal, experimental and / or institutional initiative. In the referred Program, qualitative methods, teaching techniques and interactive pedagogical actions stimulate questionings as well as interdisciplinary group and personal decisions in the search of problem-solving strategies.

Final Considerations: Recognizing students' active role in promoting interactive pedagogical approaches in health, and institutionally organizing teaching / learning models that allow collaborative construction in situations involving multidisciplinary teams may primarily benefit teaching, and secondly benefit action building in clinical practice and research as well. Group questionings and problem-solving actions both in the classroom and in patient care rooms may foster the effective construction of a teaching program toward competence formation by encouraging learners' autonomy.