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Internal Medicine

Relationship between Physical Exercise and Major Depressive Disorder in patients with chronic renal failure: a meta-analysis

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INTRODUCTION

Chronic non-communicable diseases are responsible for about 60% of deaths worldwide, including Chronic Kidney Disease (CKD). In turn, CKD is a risk factor for the onset of Major Depressive Disorder (MDD). These disorders affect the quality of life of individuals who have it. In this context, physical exercise becomes an important ally in the treatment and reduction of MDD, in addition to bringing other benefits such as reduced body adiposity, decreased blood pressure and improved lipid profile of its practitioners.

AIM

To evaluate the relationship between physical activity and major depressive disorder in patients with chronic kidney disease.

METHODS

This study followed the recommendations of the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) and consists of a systematic review of the literature with meta-analysis.

RESULTS

A search was performed in 4 databases, Scielo, Pubmed, Embase and Scopus, where 51 clinical trials were found, excluding 7 duplicate articles, but only 3 were eligible for meta-analysis. All studies used the Beck Depression Inventory (BDI) to classify patients as mild, moderate and severe. The average in years of dialysis was 7.7 and 6.1 in the intervention group of 2 works. All patients who had severe, mild or moderate depression in the intervention group at the end of the studies did not present any degree of depression. Cycling was used as an intervention. The frequency of physical exercise was 3 times a week. None of the patients were using psychotropic or antidepressant agents. The meta- analysis showed benefits for reducing major depressive disorder [- 1.30 (–2.01, –0.59), $p < 0.0003$].

CONCLUSION

Physical exercise is an effective tool with intervention to reduce symptoms in patients with mild, moderate and severe depression associated with chronic kidney disease.

Thromboembolic complications in patients with acute myeloid leukemia

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INTRODUCTION

The risk of thromboembolic events (TE) in patients with hematologic malignancies was thought to be lower in comparison to solid tumors. Still, new research suggests it is similar or even higher in those with hematologic illnesses. Incidence of TE in patients with acute myeloid leukemia (AML) varies in different studies between 2 and 13%. Additionally, there is no clear data on predictive factors for TE, nor guides for thromboprophylaxis.

AIM

The aim of this study is to acquire data on the frequency of TE, therapy, localization, disease stage upon diagnosis and prognostic factors for their onset.

METHODS

This retrospective study will include 150 patients diagnosed and treated for AML in the Hematology Clinic at the Clinical Center of Serbia, diagnosed according to World Health Organization (WHO) recommendations.

RESULTS

Venous thromboembolism (VTE) developed in 18% ($n=27$) patients. Most frequently, it was the deep vein thrombosis (DVT) 17.33%, 16% of patients with central venous catheter (CVC) related thromboembolism, and 0.67% with pulmonary embolism (PE). Arterial thrombosis was not noted. Thrombosis usually occurred during the phase of administration of consolidation therapy (41.94%). Discrepancy between the groups with and without VTE was statistically relevant, concerning: gender ($p=0.009$), D-dimer ($p<0.001$) and lethal outcome ($p=0.002$). Patients with VTE lived longer in comparison with the group without VTE ($p=0.001$, SE= 0.482, 95% CI 3.056 – 4.944). The group of AML patients with thrombosis (median 10 months (0.5 – 46); SE=3.92, 95% CI 2.324 - 17.676) had a higher five-year survival rate than the one without (median 3 months (0 – 38); SE=0.533, 95% CI 1.955 – 4.045). After thrombosis, 24 patients were treated using anticoagulant therapy.

CONCLUSION

Our study showed a higher incidence of VTE then in previously published studies. Furthermore, our study showed that male patients in consolidation with a CVC and an initial high D-dimer should be considered for thromboprophylaxis.

Comparison of Vitamin D Level in Preterm and Term Infant–Mother Pairs

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RNA-Sequencing data. II) Determine whether expression changes could be advantageous for application in IVD degeneration therapies.

METHODS

High-throughput paired-end RNA-Sequencing data for primary ASCs from 3 donors was analysed post-stimulation with GDF-6. Differentially expressed genes were subjected to hierarchical and K-means clustering, followed by gene ontology and pathway analysis.

RESULTS

Gene ontology results for 1028 differentially expressed genes ($padj < 0.05$) showed significant enrichment for biological processes related to immune cell development and cytokine signalling after GDF-6 stimulation. Canonical pathway analysis showed significant enrichment of transforming growth factor- β (TGF-β) and Interleukin (IL) pathways IL-10 and IL-6 ($p < 0.05$ Log2 fold change > 0.55). Significantly upregulated molecules TGF- β1 and Hepatocyte growth factor (HGF) were predicted as master transcriptional regulators in the top regulatory network, acting through significantly activated NF-kB signalling ($p < 0.05$ Z-score > 2).

CONCLUSION

The significant upregulation of key genes IL-1 receptor antagonist, TGF-β1, and HGF support that stimulation of ASCs with GDF-6 promotes an upregulation in a profile of anti-inflammatory genes comparable to that of stimulation experiments with inflammatory cytokines. Upregulation of IL-6 family members without significant upregulation of IL-6 itself indicates an anti-inflammatory profile of expression which may be advantageous to potential IVD therapies.

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Different Mechanical Ventilation Parameters Impact on Mechanical Power in Volume-Controlled Continuous Mandatory Ventilation, Pressure-Controlled Continuous Mandatory Ventilation and Adaptive Support Ventilation

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INTRODUCTION

It is known that ventilator-induced lung injury (VILI) can occur due to mechanical power (MP), especially if ventilation method and settings are inadequate.

AIM

Aim of this study was to evaluate different mechanical ventilation parameters impact on MP generated while using conventional mechanical lung ventilation methods - volume (V-CMV) and pressure (P-CMV) controlled and automatic ventilation techniques (Intellivent-ASV).

METHODS

Mechanical lung ventilation was performed using a 'Hamilton S1' device. Ventilation methods were applied in the following order: V-CMV → P-CMV → V-CMV → P-CMV → Intellivent-ASV. Single patient data recording lasted for 31 minutes: 5 minutes for each method and up to 2 minutes for adaptation. Normocapnia and normoxemia were maintained. Two different equations were used to calculate the MP caused by different ventilation methods. To evaluate results statistical analyses were carried out.

RESULTS

Our study included 11 patients with a median age of 74 years [36,82]. The average MP caused was: V-CMV (12.4 ± 4.4), P-CMV (15.4 ± 6.4), Intellivent-ASV (13.6 ± 6.0). No significant differences between the MP caused by different ventilation methods were found ($p = 0.81$). In V-CMV MP correlated significantly with peak pressure, Ppeak ($p = 0.007$, $r = 0.755$), respiratory rate, Ftotal ($p = 0.001$, $r = 0.836$), inspiration time, Tinsp ($p = 0.01$, $r = -0.738$), inspiratory flow, Finsp ($p = 0.00$, $r = 0.873$) and mean pressure, Pmean ($p = 0.009$, $r = 0.77$). In P-CMV and Intellivent-ASV MP correlated significantly with Tinsp ($p = 0.02$, $r = -0.685$; $p = 0.004$, $r = -0.791$), driving pressure, ΔP ($p = 0.029$, $r = 0.655$; $p = 0.00$, $r = 0.891$) and mean pressure, Pmean ($p = 0.005$, $r = 0.806$; $p = 0.048$, $r = 0.636$).

CONCLUSION

In terms of generated MP conventional ventilation methods did not differ statistically and can therefore be safely applied in clinical practice. Ftotal, Finsp in V-CMV and ΔP, Pmean in P-CMV and Intellivent-ASV appeared to have greatest effect on mechanical ventilation caused MP.

The effectiveness of dynamic cupping on senior male handball athletes' shoulder active range of motion: A randomized controlled trial

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INTRODUCTION

Shoulder adaptations to overhead practice includes, but are not limited to, higher medial rotation torque external rotation range of motion, combined with a decrease in total range and internal rotation range of motion. The combination of these different factors can lead to adjustments in shoulder mobility in the handball player with decreased flexibility.

AIM

To analyze the immediate effects of dynamic cupping on shoulder active range of motion (AROM) of senior male handball athletes.

METHODS

After completing the socio-demographic and clinical questionnaire, 80 senior male handball athletes were randomly assigned to two designated groups, Dynamic Cupping Therapy Group (DCTG; $n = 40$) and Control Group (CG; $n = 40$) (no intervention). Shoulder AROM (flexion, extension, abduction, adduction, horizontal adduction, horizontal abduction, internal rotation and external rotation movements) was assessed in both groups before (M0) and after (M1) intervention.

RESULTS

After intervention, the DCTG demonstrated a statistically significant increase in shoulder AROM for all movements, while the CG increased only in internal rotation ($p = 0{,}042$), adduction ($p = 0{,}011$), horizontal abduction ($p = 0{,}004$) and horizontal adduction ($p = 0{,}005$) movements. The DCTG demonstrated a statistically significant increase in shoulder AROM in all movements, compared to CG in M1.

CONCLUSION

The present study demonstrates that dynamic cupping improves shoulder AROM in senior male handball athletes.