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GENITOURINÁRNE MALIGNITY

Gvozdjáková A, Kucharská J, Rausová Z, Lopéz-Lluch G, Navas P, **Palacka P,** Bartolčičová B, Sumbalová Z.

Effect of vaccination on platelet mitochondrial bioenergy function of patients with post-acute COVID-19

Viruses 2023; 15(5): 1085.

Background: Mitochondrial dysfunction and redox cellular imbalance indicate crucial function in COVID-19 pathogenesis. Since 11 March 2020, a global pandemic, health crisis and economic disruption has been caused by SARS-CoV-2 virus. Vaccination is considered one of the most effective strategies for preventing viral infection. We tested the hypothesis that preventive vaccination affects the reduced bioenergetics of platelet mitochondria and the biosynthesis of endogenous coenzyme Q_{10} (CoQ10) in patients with post-acute COVID-19.

Material and methods: 10 vaccinated patients with post-acute COVID-19 (V + PAC19) and 10 unvaccinated patients with post-acute COVID-19 (PAC19) were included in the study. The control group (C) consisted of 16 healthy volunteers. Platelet mitochondrial bioenergy function was determined with HRR method. CoQ10, γ-tocopherol, α-tocopherol and β-carotene were determined by HPLC, TBARS (thiobarbituric acid reactive substances) were determined spectrophotometrically.

Results: Vaccination protected platelet mitochondrial bioenergy function but not endogenous CoQ10 levels, in patients with post-acute COVID-19.

Conclusions: Vaccination against SARS-CoV-2 virus infection prevented the reduction of platelet mitochondrial respiration and energy production. The mechanism of suppression of CoQ10 levels by SARS-CoV-2 virus is not fully known. Methods for the determination of CoQ10 and HRR can be used for monitoring of mitochondrial bioenergetics and targeted therapy of patients with post-acute COVID-19.

PODPORNÁ LIEČBA

Chovanec J Jr, Chovanec J Sr, Chovanec M, Mego M.

Levels of NT-proBNP in patients with cancer

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At present, it is well known that natriuretic peptides may be produced by cancer cells. Stimulation of N-terminal pro B-type natriuretic peptide (NT-proBNP) synthesis may be a reaction to activity of several proinflammatory cytokines. NT-proBNP is also a marker of myocardial damage during cardiotoxic chemotherapy by anthracyclines. The present study aimed to analyze the association between NT-proBNP and patient/disease characteristics in patients without cardiac symptoms. The present clinical study included 112 patients with cancer who were undergoing anticancer therapy between December 2017 and December 2021. From each patient, peripheral blood was obtained for detection of NT-proBNP before any therapy, after therapy and 1 year after the first sample. NT-proBNP was examined using an immunochemical method. The mean ± SEM value of NT-pro-BNP in the first, second and third sample was 561.0±75.1, 1,565.4±461.1 and 1,940.7±581.1 ng/l. A total of 15 (13.4%), 27 (24.1%) and 25 (30.1%) patients had elevated levels of NT-pro-BNP in the first, second and third sample above the normal value adjusted to age. It was observed that NT-proBNP was increased in older patients and in patients with progressive metastatic disease with poor prognosis. Patients with non-elevated NT-proBNP in the second and third sample had significantly improved OS compared with patients with elevated NT-proBNP [hazard ratio (HR), 0.47; 95% CI, 0.26-0.85; P=0.002 for the second sample; and HR, 0.29; 95% CI, 0.14-0.60; P=0.0000007, for the third sample]. The baseline NT-proBNP value was not prognostic for OS (HR, 0.98; 95% CI, 0.50-1.92; P=0.96). The present results suggest that the level of NT-proBNP was associated with the extent of oncologic disease. Higher levels were associated with progression of metastatic disease and shorter overall survival.

Hoenigl M, Salmanton-García J, Egger M, Gangneux JP, Bicanic T, Arikan-Akdagli S, Alastruey-Izquierdo A, Klimko N, Barac A, Özenci V, Meijer EFJ, Khanna N, Bassetti M, Rautemaa-Richardson R, Lagrou K, Adam KM, Akalin EH, Akova M, Arsic Arsenijevic V, Aujayeb A, Blennow O, Bretagne S, Danion F, Denis B, de Jonge NA, Desoubeaux G, **Drgona L**, Erben N, Gori A, García Rodríguez J, Garcia-Vidal C, Giacobbe DR, Goodman AL, Hamal P, Hammarström H, Toscano C, Lanternier F, Lass-Flörl C, Lockhart DEA, Longval T, Loughlin L, Matos T, Mikulska M, Narayanan M, Martín-Pérez S, Prattes J, Rogers B, Rahimli L, Ruiz M, Roilides E, Samarkos M, Scharmann U, Sili U, Sipahi OR, Sivakova A, Steinmann J, Trauth J, Turhan O, Van Praet J, Vena A, White PL, Willinger B, Tortorano AM, Arendrup MC, Koehler P, Cornely OA; ECMM Candida III Study Group.

Guideline adherence and survival of patients with candidaemia in Europe: results from the ECMM Candida III multinational European observational cohort study

Lancet Infect Dis. 2023 Jun;23(6):751-761.

Background: The European Confederation of Medical Mycology (ECMM) collected data on epidemiology, risk factors, treatment, and outcomes of patients with culture-proven candidaemia across Europe to assess how adherence to guideline recommendations is associated with outcomes.

Methods: In this observational cohort study, 64 participating hospitals located in 20 European countries, with the number of eligible hospitals per country determined by population size, included the first ten consecutive adults with culture-proven candidaemia after July 1, 2018, and entered data into the ECMM Candida Registry (FungiScope CandiReg). We assessed

ECMM Quality of Clinical Candidaemia Management (EQUAL Candida) scores reflecting adherence to recommendations of the European Society of Clinical Microbiology and Infectious Diseases and the Infectious Diseases Society of America guidelines.

Findings: 632 patients with candidaemia were included from 64 institutions. Overall 90-day mortality was 43% (265/617), and increasing age, intensive care unit admission, point increases in the Charlson comorbidity index score, and Candida tropicalis as causative pathogen were independent baseline predictors of mortality in Cox regression analysis. EQUAL Candida score remained an independent predictor of mortality in the multivariable Cox regression analyses after adjusting for the baseline predictors, even after restricting the analysis to patients who survived for more than 7 days after diagnosis (adjusted hazard ratio 1·08 [95% CI 1·04-1·11; p<0·0001] in patients with a central venous catheter and 1·09 [1·05-1·13; p<0·0001] in those without one, per one score point decrease). Median duration of hospital stay was 15 days (IQR 4-30) after diagnosis of candidaemia and was extended specifically for completion of parenteral therapy in 100 (16%) of 621 patients. Initial echinocandin treatment was associated with lower overall mortality and longer duration of hospital stay among survivors than treatment with other antifungals.

Interpretation: Although overall mortality in patients with candidaemia was high, our study indicates that adherence to clinical guideline recommendations, reflected by higher EQUAL Candida scores, might increase survival. New antifungals, with similar activity as current echinocandins but with longer half-lives or oral bioavailability, are needed to reduce duration of hospital stay.

Kohutek F, Bystricky B.

Optimal dose of silymarin for the management of drug-induced liver injury in oncology

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Systemic oncological treatment may cause drug-induced liver injury (DILI). Therefore, there is a pressing need for an active drug able to accelerate liver regeneration. Silymarin mitigates oxidative stress, and inhibits pro-inflammatory and pro-apoptotic cytokines and the fibrotic transformation of liver tissue. Currently, there are a lack of data regarding the optimal dosage of silymarin and its efficacy. Thus, the present retrospective study aimed to determine the optimal dose of silymarin for use in oncological DILI treatment. For this purpose, 180 patients with solid malignancies treated with systemic oncological therapy and silymarin between January, 2015 and November, 2021 were enrolled in the study. Alanine aminotransferase (ALT), aspartate aminotransferase (AST) and total bilirubin (Bil) levels, as well as the dose of silymarin were assessed at the initiation of silymarin treatment, after 3-6 weeks and after 6-12 weeks. Pearson's correlation analysis was performed to evaluate the correlation between the initial dose of silymarin (IDoS), and the ALT, AST and Bil levels. The effects of four independent variables, namely IDoS, the initial dose reduction of systemic treatment, the systemic treatment dose reduction at first assessment (DR1M) and the elevation of the silymarin dose at first control on the ALT, AST and Bil levels were evaluated using regression analysis. The median IDoS was 450 mg. A decrease in or the stabilization of the ALT, AST and Bil levels after 6-12 weeks were observed in 68.63, 65.85 and 53.25% of patients, respectively. There was a weak correlation between IDoS and the decrease in ALT and AST levels after 6-12 weeks (correlation coefficient, R=0.361 and 0.277 respectively, P<0.001). No significant correlation between the IDoS and a decrease in Bil levels was observed. DR1M was a negative predictor for a decrease in Bil levels in patients with liver tumors. On the whole, the present study demonstrates that silymarin appears to be efficient in alleviating DILI at a dose of 300-450 mg. A further increase in the dose of silymarin may not lead to an adequate increase in its efficacy.

Abstrakty z konferencií

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Prognostic value of DNA damage repair and tolerance factors in patients with muscle-infiltrating urothelial carcinoma.

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