



Cardio Mag

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Dear Doctor,

*Greetings from Micro Labs Limited. We are happy to bring you “**Cardio Mag**”, which contains latest and interesting news in the field of Cardiology.*

This issue contains

-  Association between prehospital arterial hypercapnia and mortality in acute heart failure: a retrospective cohort study
-  A case of myocarditis in a 60-year-old man 48 h after mRNA vaccination against SARS-CoV2
-  Rice bran oil could favorably ameliorate atherogenicity and insulin resistance indices among men with coronary artery disease: post hoc analysis of a randomized controlled trial

Should you require any specific article or medical information, please feel free to contact us at medicalservices@microlabs.in

Looking forward to your valuable feedback.

Best Regards,

Medical Team, Micro Labs Limited



Association between prehospital arterial hypercapnia and mortality in acute heart failure: a retrospective cohort study

Introduction:

Acute Heart Failure is a life threatening medical condition which requires urgent evaluation and treatment. It is associated with an increase rate of morbidity and mortality. Treatment of Acute Heart Failure includes vasodilators medication, diuretics and oxygen. Positive end expiratory pressure, with or without pressure support, has found to be beneficial in case of severe Acute Heart Failure. In the prehospital setting, NIV has been shown to decrease the intubation rate in Acute Heart Failure patients. Some factors affect the prognosis of Acute Heart Failure patients like: low systolic arterial blood pressure, ischemic or parainfectious etiologies, renal dysfunction, and polymorbidity. Other factors like glucose variation during hospitalization have been created to estimate the Acute Heart Failure associated prognosis.

Objective:

To determine if prehospital hypercapnia is associated with mortality in Acute Heart Failure.

Method:

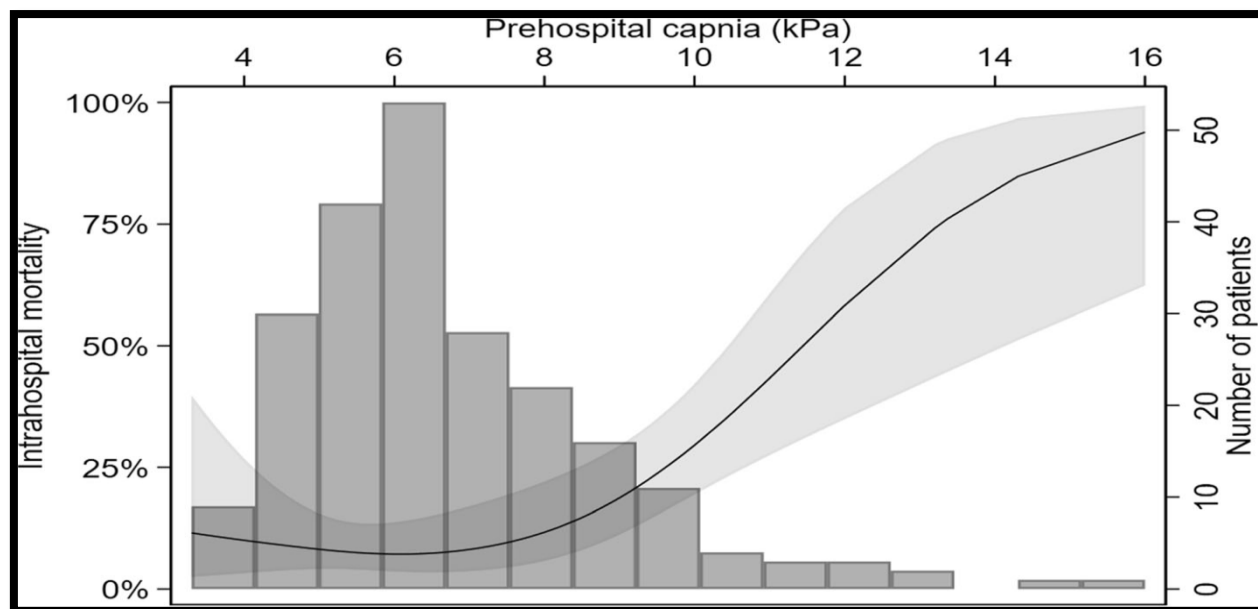
This study was based on data obtained from an electronic chart review, exploring the association between prehospital hypercapnia and mortality. 225 Adult patients with acute heart failure were enrolled in this study. Patient with no records of arterial blood gas, patients with the presence of a potentially confounding diagnosis, prehospital cardiac arrest, inter-hospital transfers were excluded from the study. Hypercapnia (a PaCO₂ higher than 6.0 kPa) was the main predictor of the study. The primary outcome was in-hospital mortality, and secondary outcomes were 7-day mortality and length of stay in ER. Univariable and multivariable logistic regression models were used.



Results:

Of total patient, Prehospital hypercapnia was found in 132 (58.7%) patients. In-hospital mortality was higher in patients with hypercapnia (17.4% [23/132] vs 6.5% [6/93], $p = 0.016$), with a crude odds-ratio of 3.06 (95%CI 1.19–7.85). Female patients, were more likely to have hypercapnia (69.7% versus 54.8%, $p = 0.023$). Hypercapnia patients had higher diastolic blood pressures (103.6 mm Hg versus 93.7 mmHg, $p = 0.036$) and were more likely to have abnormal GCS scores (62.1% had a normal GCS versus 81.7%, $p = 0.002$). They were also more likely to be treated by NIV (93.9%versus 74.2%, $p < 0.001$). After adjustment for pre-specified covariates, the adjusted odds ratio was 3.18 (95%CI 1.22–8.26). The overall 7-day mortality was also higher in hypercapnia patients (13.6% versus 5.5%, $p = 0.044$), and ER length of stay was shorter in this population (5.6 h vs 7.1 h, $p = 0.018$).

Crude association between PaCO₂ and intrahospital mortality, with patients repartition





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Conclusion:

Prehospital hypercapnia is associated with an increase in in-hospital and 7-day mortality in patients with acute heart failure. Prospective randomized studies should be performed before systematic prehospital analysis can be recommended in these patients.

Reference:

Fabre M, et al. Association between prehospital arterial hypercapnia and mortality in acute heart failure: a retrospective cohort study. BMC Emergency Medicine. 2021 Dec;21(1):1-8.



A case of myocarditis in a 60-year-old man 48 h after mRNA vaccination

Background:

Vaccines to prevent SARS-CoV2 infection are considered to be the most promising approach for restraining the pandemic and are being vigorously pursued. Several vaccines are available for use in different parts of the world, over 40 candidate vaccines were in human trials, and over 150 were in preclinical trials. According to US Center for Disease Control, a number of 56–69 cases of myocarditis per 1 million mRNA-vaccine doses have to be expected in the age group of 12–17 years in males and of only 3–4 cases in the age group ≥ 30 years. Development of various adverse events due to SARS-CoV-2 infection have been reported either at the time of disease progression or following recovery from the disease. In order to answer this question, a temporal relationship between vaccination and Adverse drug reactions is required.

Case Presentation:

A 60-year-old man with a known case of degree I arterial hypertension having normal BMI and empty cardiovascular anamnesis, on July 1st, 2021 received 2nd dose of mRNA-vaccine (mRNA-1273, Moderna). Patient complained of developing a typical vaccination reaction with 39 °C fever and dizziness. After 24 hours of vaccination, patient had palpitations and after 36 hours fainted and lost consciousness for some seconds. Patient was then admitted to the hospital, where the ECG showed sinus rhythm and no signs of ischemia. Fast track echocardiography was normal, but the troponin T at admission was increased to 160 ng/L

and together with the preceding syncope an urgent coronary angiography was indicated. Cardiac magnet resonance imaging was performed next day, which showed a focal oedema of anterolateral medial wall in the T2 sequences and a corresponding subepicardial late enhancement in the short axis and 4 chamber view both consistent with the diagnosis of a myocarditis. At day 5, the troponin declined to the normal range and the patient remained symptoms free, and was discharged. The echocardiography a week and a month later remained normal, so that we presume a complete recovery.



a. Cardiac MRI, b. Short-axis view showing subepicardial gadolinium late enhancement anterolateral medial, c. corresponding four-chamber view



Conclusion:

The incidence of myocarditis, although low, increased after the mRNA SARS-CoV2 vaccination. All the physicians and authorities should be alert to this rare side effect of mRNA vaccination.

Reference:

Habedank D, Lagast A, Novoa-Usme M, Atmowihardjo I. A case of myocarditis in a 60-year-old man 48 h after mRNA vaccination against SARS-CoV2. *Clinical Research in Cardiology*. 2021 Nov 3:1-3.



Rice bran oil could favorably ameliorate atherogenicity and insulin resistance indices among men with coronary artery disease: post hoc analysis of a randomized controlled trial

Introduction:

Atherosclerosis is a chronic inflammatory condition known to occur through the growth of lipid lesions, monocytes and macrophages accumulation in the blood vessels and releases pro inflammatory mediators which result in subsequent atheroma formation. Prompt and proper diagnosis of cardiovascular diseases, most importantly at early stages could prevent subsequent metabolic disorders. Rise in lipid parameters, such as triglyceride, high-density lipoproteins-cholesterol, low-density lipoproteins-cholesterol, and total cholesterol, have been well-established as indicators of coronary artery disease. However, there are limited information of the same and would not be able to accurately reflect the severity of atherosclerotic lesions progression, arterial stiffness, and poor prognosis in CAD patients. Despite recent advances in recognizing more reliable indicators to estimate the coronary artery disease, less attention and patient's response to treatment and prognosis has been paid to evaluating them in various clinical trials.

Objective:

This randomized controlled trial aimed to study the impact of rice bran oil Vs sunflower oil on various atherogenicity and insulin resistance markers.



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Method:

This study enrolled 40 coronary artery disease men with an average age of 56 years and were randomised into intervention or control group to use rice bran oil or sunflower oil (30 g/day) with a standardized dietary plan. All enrolled subjects in both rice bran oil or sunflower oil receiving groups were prescribed the same drugs. Patients' demographic, socioeconomic and previous medical history was gathered through an in person interview. Anthropometric data were evaluated at the initial visit and after the research and BMI was calculated. At the first visit and post-intervention, fasting venous blood samples were collected to find out the lipid profile, fasting blood sugar, and serum inflammatory mediators.

Results:

Analysis of covariance test was performed and potential confounders and baseline levels were considered, indicated that using rice bran oil compared to sunflower oil reduced Castelli's risk index I and II (adjusted means: 3.29, 1.52 vs. 4.61, 2.20, respectively), atherogenic coefficient (2.29 vs. 3.61), lipoprotein combine index (6.54 vs. 17.53), and cholesterol index (0.46 vs. 1.20) after the trial (P-value $\leq$ 0.002). The rice bran oil group yielded significantly lower triglyceride glucose index (8.73 vs. 9.13) (P-value=0.010). Significant amelioration in triglyceride/ high density lipoproteins ratio and atherogenic index of plasma (1.48 and 0.13 vs. 1.86 and 0.24 respectively) were recorded taking P-value = 0.07. Significant Positive correlations between alterations in TNF- α serum levels and the majority of evaluated indices (P-value < 0.05) were noted with the help of Spearman correlation analysis.



Changes in atorvastatin, losartan, and pantoprazole atherogenicity and insulin resistance indices in males with coronary artery disease before and after consumption of RBO or SFO plus a standard diet in an 8-week randomized controlled trial

Cholesterol index (CHOLNDEX)	Studied Group		P-value
	SFO group (n = 19)	RBO group (n = 18)	
Baseline	1.57 (1.02)	1.66 (1.06)	0.789 £
After 8 weeks	1.16 (0.85)	0.51 (0.57)	0.010 £
Differences	-0.41 (0.93)	-1.16 (0.90)	0.019 £
P-value	0.070	< 0.001	
Adjusted mean (95%CI)	1.20 (0.90–1.50)	0.46 (0.15–0.77)	0.002 δ

Conclusion:

This study highlighted that, incorporating 30 g of rice bran oil into the patient's usual diet can be effective in ameliorating atherogenicity and insulin resistance indicators among men with coronary artery disease. The anti atherogenic ameliorating effects of rice bran oil might be partly related to its anti-inflammatory features considering the positive correlations between changes in the indices and serum TNF alpha level.

Reference:

Mahdavi-Roshan M, Salari A, Vakilpour A, Savar Rakhsh A, Ghorbani Z. Rice bran oil could favorably ameliorate atherogenicity and insulin resistance indices among men with coronary artery disease: post hoc analysis of a randomized controlled trial. *Lipids in Health and Disease*. 2021 Dec;20(1):1-2.



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