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Iron and Ferritin Status in Liver, Spleen and Kidney in Porcine Model of Acute Heart Failure

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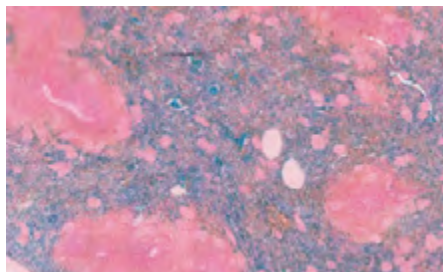
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Heart Failure (HF) has broad effects on the body including causing changes in iron status. Such disorders have been found in various forms of HF, both acute and chronic. HF compromises kidney function and contributes to blood congestion in organs such as the liver and spleen. These organs play an important role in the regulation and turnover of iron in the body. Iron disorders have a significant impact on the quality and length of patients' lives. Despite many studies, understanding of the mechanisms surrounding iron deficiency states is still incomplete. The purpose of this study was to determine whether an episode of acute myocardial ischemia contributes to changes in iron and ferritin status in the body, and if so, whether these changes are significant. Ferritin has become a major focus of investigation as a key protein for maintaining iron homeostasis. It participates in the storing and controlled release of iron. Due to the impact of pathological factors on ferritin, it is also a diagnostic marker. The tissues of pigs in which experimental myocardial infarction was induced by temporary occlusion of the Left Descending Coronary Artery (LAD) were studied. The control group consisted of 6 animals in which the femoral artery was catheterized without any cardiac intervention. The animals were humanely euthanized 3 months after the procedure. For the determination of iron, Fe³⁺ in tissue homogenates after electrophoretic separation under non-reducing conditions in polyacrylamide gels and histological preparations, the Prussian blue staining method was used. Immunoblotting was also performed to detect ferritin light chain and heavy chain. The results suggest iron accumulation in the liver and spleen in individuals who had an episode of acute heart failure.



Recent Publications

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2. Alnuwaysir, Ridha I S *et al.* "Iron Deficiency in Heart Failure: Mechanisms and Pathophysiology." *Journal of clinical medicine* vol. 11,1 125. 27 Dec. 2021, doi:10.3390/jcm11010125
3. Zhang, Hao *et al.* "Role of iron metabolism in heart failure: From iron deficiency to iron overload." *Biochimica et biophysica acta. Molecular basis of disease* vol. 1865,7 (2019): 1925-1937. doi:10.1016/j.bbadis.2018.08.030

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Biography

Kacper Nowak is a PhD student of Doctoral School at Department of Internal Disease and Clinic of Horse, Dogs and Cats Wrocław University of Environmental and Life Sciences. He graduated from Veterinary Medicine Faculty of Wrocław University of Environmental and Life Sciences in 2019. Authorized as a veterinary surgeon in Poland and Denmark. Employed as veterinarian in Vodskov Dyreklinik in Denmark since 2019. Involved in research investigating iron status in acute and chronic heart failure. Interested in invasive cardiology and imaging diagnostics.

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