



G94 Evaluation of NT-proBNP as Marker of Heart Failure in Postmortem Examination

Katarzyna Michaud, MD*, and Marc Augsburger, PhD, Institut Universitaire de Médecine Légale, Bugnon 21, Lausanne, 1005, Switzerland; Nicolas Donzé, Consilia, Grand Champsec86, Sion, 1950, Switzerland; and Marc Bollmann, MD, Béat Horisberger, MD, Bettina Schrag, MD, and Patrice Mangin, PhD, Institut Universitaire de Médecine Légale, Bugnon 21, Lausanne, 1005, Switzerland

The goal of this study was to evaluate the new biochemical marker NT-proBNP in postmortem examination as a tool for diagnosis of heart failure in cases related to coronary ischemia.

This presentation will impact the forensic community and/or humanity by showing that measurement of NT-proBNP is reliable in postmortem examination and should be considered as a useful tool for autopsy diagnosis of acute or chronic heart failure, whatever its origin.

Introduction: Natriuretic peptides are synthesized and secreted by cardiomyocytes in response to increases in wall stress and their plasma levels are elevated in patients suffering from myocardial infarction with systolic dysfunction. Many publications consider one of these peptides, BNP, as an excellent marker of heart failure. Recently, in clinical medicine, the amino terminal part of pro-BNP (NT-proBNP) was introduced which is secreted in equivalent proportion to BNP. According to the published studies, this new cardiac marker has a longer half-life and a better stability in comparison to the BNP. Moreover, many authors considered high levels of NT-proBNP as an independent predictor of mortality.

The first goal of this study was to measure the levels of NT-proBNP in patients with coronary syndromes and compare them to a control group. As serum is not always available during postmortem examination, the second goal of this study was to evaluate a correlation between NT-proBNP levels measured in serum, blood, aqueous humor and pericardial fluid.

Material and Methods: This study included 34 cases. 25 patients presented an ischemic heart disease (21 men and four women), in 15 of them postmortem examination revealed an acute coronary syndrome. In a control group were included nine cases (5 men and four women) without cardiac pathology. According to the clinical history and autopsy findings, the cases were classified into four groups. For each case, an autopsy followed by a histological examination was performed. The examination of the heart included a macroscopical examination and the analysis of at least five slides of the myocardium, stained with haematoxylin and eosin, and with von Gieson trichrome. The putrefied cases were excluded from the study.

Postmortem blood samples were centrifuged in order to obtain "serum." The NT-proBNP measurements were performed in serum, blood, aqueous humor, and pericardial fluid using a chemiluminescent immunoassay kit (Elecsys 2010 analyzer, Roche Diagnostics).

Results: The highest serum levels were measured in patients with acute coronary syndrome associated with chronic ischemic disease revealed by a clinical history or detected at autopsy. No significant difference was observed between patients with acute coronary syndrome and without previous ischemic disease in comparison to a control group.

In this preliminary study, the levels measured in blood, aqueous humor and pericardial fluid were in accordance with levels obtained from serum.

Conclusions: Measurement of NT-proBNP is reliable in postmortem examination. In this study, the results obtained for patients suffering from coronary syndromes are compatible with clinical data. NT-proBNP measurement should be considered as a useful tool for autopsy diagnosis of acute or chronic heart failure, whatever its origin.

Natriuretic Peptides, Coronary Syndrome, Heart Failure