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The applicability of pericardial fluid in cardiac biomarkers dosing for post-mortem diagnosis of acute myocardial infarction

Álvaro Rocha^{1*}, Agostinho Santos¹

¹Department of Public Health and Forensic Sciences, and Medical Education, Faculty of Medicine, University of Porto, 4200-319 Porto, Portugal.

*✉ alvaro.frm12@gmail.com

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Resumo

Introduction: Acute myocardial infarction (AMI) is one of the main causes of death in Portugal and worldwide, being a frequent matter in forensic medicine. Cardiac biomarkers, such as cardiac troponins T (cTnT) and I (cTnI), are used to estimate the degree of myocardial injuries when histological findings are insufficient or non-existent, being elevated in AMI cases [1]. Biochemical analysis of this type of biomarkers commonly uses peripheral blood as its gold standard fluid. However, it has also been determined during postmortem examinations that elevated cardiac biomarkers levels are present in pericardial fluid, which may indicate that this fluid can be a viable matrix for the dosing of cardiac biomarkers [2].

Objectives: The aim of the present study is to evaluate the efficacy of pericardial fluid in cardiac biomarkers dosing and, consequently, in the determination of myocardial injuries caused by AMI, by comparing concentrations obtained in peripheral blood to those obtained in pericardial fluid. **Material and Methods:** This study will

be conducted by collecting samples of peripheral blood and pericardial fluid from two groups of corpses, which had AMI related deaths and non-cardiac related deaths (control group), so that we can compare the biomarkers' concentrations in both situations. The samples will be analysed by enzyme-linked immunosorbent assay (ELISA) and in duplicate, to increase our study's precision.

Results: Several studies have showed that there is a positive correlation between these biomarkers levels in peripheral blood and in pericardial fluid, being even more elevated in this fluid thanks to being less influenced by postmortem processes, like distribution [3, 4].

Conclusion: We pretend to conclude that biochemical analysis of cardiac biomarkers using pericardial fluid can elucidate about the severity of myocardial injuries and that pericardial fluid can be a good alternative, even a better one, to peripheral blood, when it comes to determine cardiac biomarkers levels, since it is less degraded by postmortem phenomena.

Keywords: cardiac troponins; pericardial fluid; myocardial infarction; biomarkers; immunoassay

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