

mRNA Biomarkers of Mechanical Asphyxia-Induced Death in Cardiac Tissue

Authors : Yan Zeng, Li Tao, Liujun Han, Tianye Zhang, Yongan Yu, Kaijun Ma, Long Chen

Abstract : Mechanical asphyxia is one of the main cause of death; however, death by mechanical asphyxia may be difficult to prove in court, particularly in cases in which corpses exhibit no obvious signs of asphyxia. To identify a credible biomarker of asphyxia, we first examined the expression levels of all the mRNAs in human cardiac tissue specimens subjected to mechanical asphyxia and compared these expression levels with those of the corresponding mRNAs in specimens subjected to craniocerebral injury. A total of 119 differentially expressed mRNAs were selected and the expression levels of these mRNAs were examined in 44 human cardiac tissue specimens subjected to mechanical asphyxia, craniocerebral injury, hemorrhagic shock and other causes of death. We found that DUSP1 and KCNJ2 were up-regulated in tissue specimens of mechanical asphyxia compared with control tissues, with no significant correlation between age, environmental temperature and PMI, indicating that DUSP1 and KCNJ2 may associate with mechanical asphyxia-induced death and can thus serve as useful biomarkers of death by mechanical asphyxia.

Keywords : mechanical asphyxia, biomarkers, DUSP1, KCNJ2, cardiac tissue

Conference Title : ICFSC 2017 : International Conference on Forensic Science and Crime

Conference Location : London, United Kingdom

Conference Dates : January 19-20, 2017