

**Poikilocytosis is associated with the exposure length and temperature intensity in Antemortem and Postmortem Analysis -Experimental Study on Wistar Rats**

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**Abstract**

**Introduction:** The body temperature elevation caused by body heat exposure, results in significant increase of structurally transformed erythrocytes and vesicles in blood. Since there are more and more deaths that occur during bathing, especially in the bathroom or warm ambient in the summer months, the aim was to find out what happens to erythrocytes and their forms during life and after death as a result of high water temperature. Method: In order to investigate the effects of different temperature intensities (37°C and 44°C) and exposure time (20 min and until the time of death) on erythrocyte morphology, heat stress was used on a rat model. Twenty-four Wistar rats were divided into two groups: 37°C as control group and 44°C as trial groups. The trial groups were classified into antemortem the exposure time of 20 min and postmortem groups exposure time until fatal outcome. The anaesthetised rats were exposed to preheated water using the water bath. May-Grünwald-Giemsa colouring technique was applied on blood samples taken from the abdominal aorta. The light microscopy was performed (Motic Type 102M) to detect poikilocytes. Results: Exposure of Wistar rats to water temperature in groups KG37 and G44 led to a significant changes in core temperature; In the control group, the thermoregulatory mechanism established normothermia, and in G44 hyperthermia was detected during 20 minutes of exposure. The frequency of heat stroke in group G44 was 43.8%. Target cells and anulocytes were predominant in antemortem group at 44°C, while anulocytes and spherocytes in postmortem groups 44°C, respectively. Dacryocytes with spherocytes were significantly higher in postmortem group 44°C than in antemortem group 44°C ( $P=0.002$ ,  $P=0.017$ , respectively). Conclusion: Poikilocytosis is associated with the exposure length and temperature intensity. Following a fatal outcome dacryocytes with spherocytes at 44°C were significantly more than in corresponding antemortem groups.

## Biography

Emina Dervišević currently works at the forensic medicine, faculty of medicine, University of Sarajevo. She did research's in forensic medicine, but also in primary care and general medicine. She has her expertise in evaluation and forensic importance in improving the causes of death. Scientific data on the role and association of hyperthermia as a cause of sudden cardiac death are scarce and further research is needed in this field. Current science suggests that hyperthermia and the cardiac response are causally related according to the very pathophysiological sequence of events in hyperthermia. In the forensic sense, there is scarce evidence of a pathophysiological mechanism leading to sudden cardiac death. This was exactly the PhD thesis to find an adequate model of hyperthermia. The aim of thesis was to prove that the cause of sudden cardiac death was caused by high temperature, and adequate methods of proving and comparing the condition in the body before and after death. Further evaluation is needed in the experimental sense but also on human material.

## Publications

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