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Identification of mast cells in the human pericranium: possible role in the genesis of headache

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Introduction
The periosteum is a pain-sensitive membrane that contains sensory neurons and surrounds the outer surface of bones. The pericranium covers the external surface of the skull bones and, together with the dura mater, is sensitive to painful stimuli. These structures are studied in migraine as several local structures have been suggested to be involved in migraine pathophysiology. Mast cells, known as pro- inflammatory effector cells, are involved in the pathophysiology of migraine. Several animal studies have looked at the involvement of dural mast cells as a cofactor in the generation of migraine pain, although little is known about mast cells in the pericranium. This study may be the first to verify the rate of mast cell granulated in the dura mater and pericranium of human samples.

Objective
Describe the rate of mast cell granulated in the dura mater and pericranium of a post-mortem human sample.

Methods
Human dura mater and pericranium samples were collected from cadavers (18 hours post- mortem) during a standard necropsy at the death verification service of the Hospital das Clínicas of the Federal University of Pernambuco. Samples were fixed in 10% buffered formaldehyde for 24h. After fixation, tissue samples were embedded in paraffin and sectioned at 4µm. Then, the slides were deparaffinized, stained with toluidine blue concentration 0.1% for 1 min, and washed with distilled water. Finally, the slides were photomicrographed under 400x magnification to identify mast cells.

Results
Granulated and degranulated mast cells have been found in the human dura mater and pericranium. Eight granulated and 55 degranulated mast cells were quantified in the dura mater (granulation rate = 12.7%). In the pericranium, 7 granulated and 58 degranulated mast cells were quantified (granulation rate = 10.8%).

Conclusion
We detected mast cells granulated in the human pericranium and dura mater even 18 hours after death. This find suggests the feasibility of possible studies on the role of these structures in the genesis of headache.

Keywords: Pathophysiology; Imunocells; Migraine; Headache; Human.