

Surfactant Protein A (SP-A) in drowning. An immunohistochemical study on lung tissue

Enrico De Dominicis¹, Filippo Milano¹, Giuseppe Santeusano², Giovanni Arcudi², Luigi Tonino Marsella¹

¹ Department of Biomedicine and Prevention, University of Rome Tor Vergata, Italy

² Department of Experimental Medicine and Surgery, University of Rome Tor Vergata, Italy

Background and Aims. Drowning still remains one of the most difficult diagnoses in forensic pathology because macroscopic and microscopic autopsy findings are unspecific. An ideal diagnostic marker for drowning still needs to be developed, but some authors have recently studied surfactant protein A (SP-A) as marker of asphyxiation and drowning. Moreover, experimental studies have shown an increase of SP-A expression in asphyxia, suggesting its use as a marker. The aim of this study is to compare the histopathological features and the SP-A expression in lung tissue in the case of drowning with those determined by other causes to discriminate between cadaver submersion and drowning.

Materials and Methods. We studied 72 cadavers selected from medico-legal autopsies performed in the Institute of Legal Medicine of the University of Rome Tor Vergata. Cases were classified into two groups: drowning (n=21) and other causes (n=51) including multiple trauma, gunshot and cardiovascular disease. During each autopsy, lung tissue was collected from each lobe of both lungs. Specimens were fixed in formalin and embedded in paraffin. Serial sections were prepared for the hematoxylin-eosin (HE) and immunohistochemistry with anti-human SP-A antibody. Histological findings like congestion, intra-alveolar and interstitial edema, emphysema and hemorrhages have been evaluated in the HE stained sections and classified into three groups: mild (+), moderate (++) and severe (+++). The SP-A immunostaining was evaluated both in linear alveolar surface pattern and intra-alveolar granular pattern. The SP-A reactivity was classified into three groups: negative (-), positive (+) and strongly positive (S).

Results. Sections stained with HE: in the drowning group emphysema and haemorrhages were more common than those in the control group 85.7% (18/21) and 90.4% (19/21), respectively. SP-A immunohistochemistry: the linear pattern of staining was positive (+) only in a small percentage of the drowning group 14.2% (3/21) but it was totally negative in the control group. The granular pattern of SP-A immunostaining was strongly positive (S) in 85.7% of the drowning group (18/21) while it was positive (+) in 11.7% of the control group (6/51).

Conclusions. Although more cases must be studied to reach more reliable conclusions, the SP-A immunostaining appears to be a potential tool for distinguishing drowning from other causes of death when a body is found on the shore or in the water.

Key-words. Drowning, surfactant protein A, immunohistochemistry, pathology

Subject: Forensic Pathology TOPICS: Histopathology and histochemistry

I A L M

intersocietal
symposium
P5 Medicine & Justice



VENICE | 21st - 24th June

2016

Abstract Book

www.ialm2016venice.org

S. DAVIDE FERRARA

President

International Academy of Legal Medicine - IALM
IALM Intersocietal Symposium

SCIENTIFIC SECRETARIAT



Department of Legal and Occupational Medicine,
Toxicology and Public Health
University-Hospital of Padova
Via Falloppio, 50 - 35121 Padova, Italy
scientificsecretariat@ialm2016venice.org

ORGANIZING SECRETARIAT



Sistema Congressi s.r.l.
Via Trieste 26 - 35121 Padova, Italy
Ph: (+39) 049 651699
www.sistemacongressi.com
ialm2016@sistemacongressi.com