

ORAL ABSTRACTS

MONITORING CHANGES IN THE EYES - THE SIGNIFICANCE OF THE POST-MORTEM INTERVAL IN ASPHYXIA

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ABSTRACT

Post-mortem ocular changes, particularly those affecting the sclera, are valuable indicators in forensic pathology for the estimation of post-mortem interval (PMI) and the evaluation of tissue decomposition. Previous studies have shown that dark scleral spots can appear within hours after death, influenced by eyelid position and environmental conditions. Our research aimed to examine how postmortem scleral changes progress over time and whether they are affected by environmental or physiological factors.

Twelve Wistar rats were divided into four groups: K – control group, autopsy performed immediately after death (n=3); A – 24-hour postmortem interval (n=3); B – 48-hour interval (n=3); C – 72-hour interval (n=3). All rats died by asphyxia due to hanging. Temperature measured during the study included: antemortem core temperature, ambient temperature, postmortem core temperature, postmortem eye temperature, and eye temperature at autopsy. Each eye sample was examined macroscopically for corneal and scleral changes relative to the postmortem interval.

Ambient temperature significantly influenced the postmortem body temperature of the rats. With increasing postmortem interval, ocular changes, such as corneal dryness and appearance of scleral spots, became more pronounced.

This pilot study demonstrated that, despite anatomical differences from human cadavers, the Wistar rat model provides a reliable experimental framework for studying postmortem scleral changes and related temperature patterns. These findings can enhance forensic investigations and support future research on ocular indicators of the postmortem interval.

Keywords: post-mortem interval, ocular temperature, sclera, forensics

ANALIZA PROMJENA NA OČIMA – ZNAČAJ POSTMORTALNOG INTERVALA KOD ASFIKSIIJE

SAŽETAK

Postmortalne promjene oka, posebno one koje zahvataju bjeloočnicu (scleru), značajni su pokazatelji u forenzičkoj patologiji za procjenu postmortalnog intervala (PMI) i procjenu razgradnje tkiva. Prethodna istraživanja su pokazala da se tamne mrlje na bjeloočnici mogu pojaviti unutar nekoliko sati nakon smrti, a na njihov razvoj utiču položaj kapaka i uslovi okoline. Naše istraživanje imalo je za cilj ispitati kako postmortalne promjene na bjeloočnici napreduju tokom vremena i da li su pod uticajem faktora okoline ili fizioloških faktora.

Dvanaest Wistar pacova podijeljeno je u četiri grupe: K - kontrolna grupa, obdukcija urađena odmah nakon smrti (n=3); A – postmortalni interval od 24 sata (n=3); B – interval od 48 sati (n=3); C – interval od 72 sata (n=3). Svi pacovi su umrli od asfiksije uslijed vješanja. Tokom studije, mjerene su i sljedeće temperature: antemortalna temperatura jezgre, temperatura okoline, postmortalna temperatura jezgre, postmortalna temperatura oka i temperatura oka u trenutku obdukcije. Svaki uzorak oka makroskopski je pregledan radi promjena na rožnici i bjeloočnici u zavisnosti od postmortalnog intervala.

Temperatura okoline imala je značajan uticaj na postmortalnu tjelesnu temperaturu pacova. Sa produžavanjem postmortalnog intervala, očne promjene, poput sušenja rožnice i pojave mrlja na bjeloočnici, postale su izraženije.

Ova pilot-studija pokazala je da, uprkos anatomskim razlikama u odnosu na ljudske kadavere, Wistar model pacova predstavlja pouzdani eksperimentalni okvir za proučavanje postmortalnih promjena na bjeloočnici i povezanih temperaturnih obrazaca. Ovi nalazi mogu unaprijediti forenzičke istrage i podržati buduća istraživanja očnih pokazatelja postmortalnog intervala.

Ključne riječi: Bjeloočnica, forenzika postmortalni interval, temperatura oka