



Pathology/Biology Section - 2013

G59 Gaze Deviation as Image Evidence of Staged Death Scene

William R. Oliver, MD, East Carolina Univ, Brody School of Medicine, Brody Medical Sciences Bldg, Greenville, NC 27834; and Erik K. Mont, MD, Nova Scotia ME Service, 5670 Spring Garden Rd, Ste 701, Halifax, NS B3J 1H7, CANADA*

After attending this presentation, attendees will understand the importance of postmortem gaze in scene analysis and its place in the evaluation of forensic imagery of death scenes.

This presentation will impact the forensic science community by providing a better tool for analyzing images of death scenes.

With the ubiquity of digital cameras, more and more images of forensic interest are obtained not by professional forensic photographers, but as casual and found images taken by onlookers. In one recent case, a digital image of the scene of a possible homicide was obtained during a search of a house for a different reason. The purported victim was a person with outstanding warrants. The question arose as to whether or not this scene was, in fact, a death scene, or if the scene had been contrived in order to convince investigators to stop searching for the alleged victim. There were multiple issues with the scene involving multidisciplinary evaluation by experts in fields such as bloodstain pattern analysis, forensic pathology, crime scene, and others.

While the investigation is continuing, and the details of this particular scene may not be available at the time of presentation, a number of interesting questions arose involving the positioning and appearance of the body in the images. In particular, an examination of the metadata of the image and of the statistics of the image data suggested that the image had been modified. Content analysis revealed numerous incongruences, one of which was that the gaze of the decedent was directed sharply to the side, away from the camera. It has been the experience of the forensic pathologists involved that, in the absence of head trauma that deforms the geometry of the face, postmortem gaze has always been in neutral position. However, no quantitative data was available to support this conjecture.

To evaluate this, a series of measurements of gaze were performed, using a modification of the Hirschberg test. The Hirschberg test is a common and simple technique, used in ophthalmology to test for strabismus, in which a light is shined onto the cornea and the location of the specular highlight is noted. In patients with neutral gaze and without strabismus, the specular highlight will be minimally to the nasal side of the center of the pupil if the light is directly in front of the eyes. If the gaze is diverted, then the specular highlight will be off-center equally and, if there is strabismus, then one eye will be centered and the other off-centered. There are some logistical issues with performing this test in the autopsy suite. Ensuring proper lighting and camera alignment requires careful positioning of the camera, light, and body. Corneal clouding may be partially alleviated with the use of saline solution or glycerin. Changes in eye shape may occur after death that may make the measurements unreliable.

Preliminary results indicate minimal variation from neutral gaze. This result is not surprising. Numerous studies have been done evaluating changes of gaze with anesthesia; the loss of eye movement, papillary reflex, and neutral gaze are all indications of deep anesthesia (though there may be nystagmus in lighter anesthesia and occasional ventral rolling of the eyes at some levels of deeper anesthesia). It is, thus, not surprising that in death a similar relaxation to neutral position occurs. Gaze deviation of the purported victim in death scene imagery may, thus, provide an indication of staging.

Postmortem Gaze, Image Analysis, Scene Analysis