H108 Cranial Bone Trauma: Misleading Injuries

João Pinheiro, Instituto Nacional de Medicina Legal, Instit Nacional Medicina Legal, Delegação do Centro, Largo da Sé Nova, Coimbra, 0 3000, PORTUGAL; Andersen Lyrio da Silva, and Eugenia Cunha, PhD, Departamento De Antropologia, Universidade de Coimbra, Coimbra, 3000-056, PORTUGAL; and Steven A. Symes, PhD, Mercyhurst Archaeo- logical Institute, Mercyhurst College, 501 East 38th, Erie, PA 16546-0001*

Attendees of this presentation will learn from bone similar patterns of injuries how to distinguish among different weapons used in criminal cases.

This presentation will impact the forensic science community by showing how interdisciplinarity (forensic pathology-forensic anthropology) can be useful in solving homicide complex cases, even in bodies fairly well preserved.

Forensic pathologists and anthropologists are obligated to recognise traumatic patterns in soft tissue and bone. Additionally, these patterns may be analysed for potential weapons that could produce similar trauma. The cranium is commonly the area to be examined and researched in anticipation of obtaining the most information concerning the death of a victim. However, cranial injuries may take on such a capricious forms that less experienced personnel may find diagnosis difficult at best. The authors present two cases of complex skull fractures, similar in fracture pattern. Case A was a possible point of impact on the right side of skull, with radiating and concentric fractures, suggesting a gunshot wound. The other Case B, displays a quite different pattern: the body of the mandible exhibits a butterfly fracture with numerous fractures radiating across the entire cranial vault. There are numerous indicators that this is likely blunt trauma of the head.

Case A was a complete and fairly well preserved body (the head skele- tonized) whose autopsy revealed neither a traumatic injury nor a natural cause of death. While the skull was suspiciously consistent of a homicide by a gunshot wound, blunt force trauma was the real cause of death. Close examination of the internal skull demonstrated internal bending of concentric fractures, as opposed to concentric heaving fractures expected with ballistic trauma. No signs of pellets or gunshot holes were found. The skull was complete, although the biomechanics of the blunt force trauma made it difficult to juxtapose all the bone fragments in the reconstruction. Mixed with the skull, the remains sent for analysis also included an almost complete skeleton of a dog.

Case B is a putrefied/saponified male found floating in a septic well, the head severely injured apparently by a blunt trauma. Police suspected a homicide and a disposed body. Observation of soft tissues and radiographs quickly dispelled criminal behavior and indicated suicide. The 12 gauge double barrel shotgun found at the bottom of the drained well, confirmed this hypothesis. Anthropological examination of skeletal trauma, particularly in the skull, often ignores internal bone surfaces. Initial examination of Case B, is an excellent example of how middle cranial fossa damage and pellet impact sites on the endocranially surface were missed. Suicide with a smaller gauge shotgun put into the mouth initially produced no signs of lead nor any entrance plug in the bone as one would expect with a gunshot wound. The biomechanics of the described fractures are discussed with emphasis on compression/tension bending of the mandible fracture, or “Kolusaiyn” fractures according to some authors, often observed in gunshot wounds to the head.

Each case presents clear examples of the potential of multidisciplinary examination of bone trauma (forensic anthropology and pathology) even in fresh corpses, in order to achieve cause of death, weapon involved, and eventually, manner of death.

Bone Trauma, Shotgun Wound, Blunt Trauma

 ** Presenting Author*