H61 Determining Medicolegal Significance: Human vs. Selkie

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After attending this presentation, the participant will be aware of the morphological similarities and differences between human and seal thoracic vertebrae. Detailed morphological comparisons between human and seal thoracic vertebrae will provide invaluable knowledge to forensic anthropologists and pathologists who may encounter marine mammal skeletal remains due to the coastal jurisdictions they cover.

This presentation will impact the forensic community and/or humanity graphically documenting and illustrating the morphological similarities and differences of human and seal thoracic vertebrae.

Background: In many cases, the first question asked by a forensic anthropologist is whether the skeletal remains are human or non-human. For the vast majority of those cases, the question is answered relatively easily and quickly. Comparisons between human and non-human skeletal remains typically rely on macroscopic aspects of skeletal morphology (maturity, size, architecture of articular surfaces, areas of muscle attachment, fusion of elements, thickness of cortical bone, density of cancellous bone, delineation of cortical and cancellous bone, etc.), as well as microscopic aspects (osteon organization, plexiform bone, Haversian systems, etc.). The human skeletal possesses morphological features which reflect our primate ancestry and unique evolutionary adaptations (bipedal locomotion, enlarged brain, reduced faces, etc.), and it is these features which allows for the determination as to whether any given complete/partial skeleton or individual skeletal element is human or non-human. However, if the remains are those of a pathological human specimen or human fetal specimen with congenital birth defects, the determination of human/non-human becomes far more difficult. Additionally, several non-human skeletal elements have and continue to confuse some law enforcement personnel and forensic scientists (bear paws, pig premolars, horse distal caudal vertebrae). This poster will present another non-human skeletal element that has and could confuse forensic scientists.

Case History and Pathological/Anthropological Assessment: On June 19, 2003, skeletal remains (two thoracic vertebra and rib fragment) were found by a 10 year old boy digging in the water behind a relative's home at Oak Beach, New York. The County Police Department was notified and collected the remains and turned them over to the County Medical Examiner's Office where a pathological examination was conducted on June 24, 2003. The initial assessment of the vertebrae was that the remains were potentially from an adult human. On June 27, 2003, the anthropological examination of the two thoracic vertebrae and rib fragment revealed them to be "non-human," from an immature animal. On a cursory level the vertebrae looked very similar to human thoracic vertebrae, but detailed morphological features of the transverse processes, vertebral body, and the presence of vertebral body epiphyseal disks not rings were not consistent with human morphology. Consultation with Darrin Lunde, Collections Manager, Department of Mammalogy, American Museum of Natural History on July 21, 2003, resulted in the identification of the skeletal elements as belonging to a seal (Order: Pinniped; Family: Phocidae; exact genus and species not yet determined).

Conclusions: The determination as to whether any given set of skeletal remains is human or non-human, in most circumstances, is a relatively easy task to perform. The forensic literature is replete with analytical and anecdotal evidence of non-human skeletal remains that have and continue to be misidentified as human. A thorough search of the forensic literature found no reference to seal skeletal remains potentially misidentified as human. Though infrequently encountered, knowledge of the similarities and differences between human and seal thoracic vertebral morphology will prove invaluable to forensic anthropologists and pathologists whose jurisdictions include coastal regions where seal and other marine mammal skeletal remains may be recovered by civilians and law enforcement personnel.

Human vs. Non-Human, Seal, Thoracic Vertebrae

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