



Physical Anthropology Section – 2010

H1 Interpretation and Confirmation of Patterned Clothing Stains Observed on Both Tibiae

Danielle A.M. Wieberg, MA, Knoxville Police Department, 800 Howard Baker, Jr. Avenue, PO Box 3610, Knoxville, TN 37927; and Daniel J. Wescott, PhD, Florida International University, Department of Biological Sciences, 11200 Southwest 8th Street, Miami, FL 333199*

After attending this presentation, attendees will observe how staining observed on skeletal remains was positively attributed to the victim's last known attire and how different patterns were linked to various parts of the garment.

This presentation will impact the forensic science community by providing an additional means of linking the description of an individual reported missing to unidentified skeletal remains. Investigators could potentially use this information as a means of ruling out individuals when attempting to make an identification.

Compared to the typical case received by a medical examiner, forensic anthropologists are at a considerable disadvantage when attempting to establish the identity of the human remains they receive. Usually there is very little soft tissue remaining. This eliminates the presence of identifying scars, marks and tattoos; makes it difficult to determine a subject's weight; and makes visual identification difficult without reconstruction. Dental records and radiographs can only be compared if you have a pool of potential victims to compare them with. Furthermore, skeletal remains are often discovered devoid of any contextual evidence, such as clothing or jewelry.

On a positive note, anthropologists can use skeletal measurements to determine height and several discrete skeletal features to determine sex. Several different skeletal features can help determine an individual's age at death, but the estimate typically includes +/- five years in each direction, if not more. Often, they are able to determine what type of build an individual had while based on the bone structure and degree of gracility or robusticity of the skeleton. Additionally, some features on the skull and some of the long bones may indicate what "race" an individual may have identified themselves as during life. Unfortunately, all of that information can still leave several possible "victims."

When a person is reported missing, it is standard to provide a description of the clothing the victim was last seen in. Therefore, associating skeletal remains with a missing individual can be easier if there is clothing accompanying those remains. Additionally, if the remains belong to an individual that was not reported missing, the type of clothing may provide an indication of the season or temperature at the time the individual died.

Analysis of remains in this case indicated a middle-aged white male with multiple gun shot wounds and several fractures, both peri-mortem and postmortem. Furthermore, staining patterns on the tibiae of the victim in this case indicated an object, possibly a material, with a grid-like pattern had lain against the bones for some time. The stains were light brown in color and showed two distinct patterns, a very small or tight-knit square pattern, and a larger square pattern higher up on the tibia. One author postulated that the larger square pattern looked like the waffle pattern of thermal underwear, while the smaller squares resembled the cuffs. As is typical in forensic anthropology cases, any clothing accompanying the remains had not been provided so the analysis would not be influenced or biased in any way. Once the analysis was finished and the report turned in, the authors reviewed the photos taken at the recovery scene. These photos showed insulated pants that had a thermal underwear-like lining in which the decedent's legs were enclosed at the time of recovery.

The exact method through which the staining occurred is unknown, but it is most likely due to differential exposure to the sun because of the varying thickness of the fabric. Observing such patterns in the future and associating them with certain clothing items could assist anthropologists and law enforcement agencies with identification.

Anthropology, Patterns, Stains