Case Report 1.2.3 Bone Detectives

Introduction

Several bones were studied and qualitative as well as quantitative observations were recorded in the purpose of determining the sex, race, and height of the deceased individual whose bones were analyzed.

Summary of Findings

In sex determination, the best bones to use are the pelvis and the skull, which both proved the subject to be unmistakably a male. However, after measuring the femur and humerus available, the sex determination was not as certain. The femur measurements proved it belong to someone who was either a female or an indeterminate sex. Out of the four humerus measurements, two gave the humerus female characteristics, being 40mm for the vertical diameter of humeral head and 310mm for the maximum length. Using the three-race model to characterize the ethnicity of the skeletal remains also demonstrated an inconsistency. All qualitative observations qualified the skull to be white, but the quantitative measurement of the nasal index, which came out to be .71mm, said the skull was a Black person’s. Finally, after measuring the femur and humerus, the minimum value height determination calculated was of 5’4”, and the maximum height determination value was 5’8”.

Further Analysis

Knowing the facial structure of the skull, a model of the possible appearance of the subject can even be found. Also, one of the functions of the skeletal system is red blood cell production; if the bones are analyzed thoroughly, a fragment of DNA could be found and a gel can be run to genetically prove the identity of this mystery person.

A gel was run and the results allowed us to jump to a more accurate and precise conclusion. The markings showed that Suspect 1 matched the Bone Cut 1 markings, which were for enzyme 1, but did not match the Bone Cut 2 because he had an additional fragment marking. The results for Suspect 2 showed a perfect match to both Bone Cut 1 and Bone Cut 2.

Conclusion

After taking into consideration all of these qualitative and quantitative observations, the subject was concluded to be a white male of about 5’4” to 5’8” in height. He was also found to be Suspect 2 after the gel electrophoresis examination was completed.