A113 Stature Determination From the Adult Human Clavicle: A Medicolegal Autopsy Study on the Indian Population of the Northwest Region of India

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The goals of this presentation are to explore the relationships of the mean length of the clavicle and stature in the Indian population of the northwest region and to formulate regression equations for stature estimation from clavicular length for both sexes.

This presentation will impact the forensic science community by exploring methods to estimate stature from fragmentary remains of mutilated bodies to help establish individuality of a person in cases of terrorist attacks, war causalities, and train and airplane accidents in which body mutilation is likely. At times, criminals may intentionally destroy the remains of their victims to make their identification difficult or they may be destroyed by animals after death.

Left and right clavicular lengths from 256 adult cadavers (44 female and 212 male) without trauma-related fractures and mass lesions or deformities were collected between Jan 1, 2011, and December 31, 2012, at the Department of Forensic Medicine, Government Medical College Amritsar, Punjab, India. The cadaver stature was measured as distance from the vertex to the sole using a special osteometric board. The maximum clavicular length of both sides was measured using sliding digital Vernier calipers and the average length of bilateral clavicles was also calculated for each case.

The mean length of the clavicle in females on the right side was 139.68mm and 140.21mm on the left side. For males, the mean length of the clavicle on the right side was 150.71mm and for the left was 151.89mm. The mean stature of females was 157.47cm and was 168.51cm for males. Separate regression equations were calculated for both sexes in respect to the length of the right clavicle, left clavicle, and average length of bilateral clavicles.

In terms of gender, the male length of the clavicle was more correlated to the stature of a person as compared to females. In males, the average length of the bilateral clavicle (r=0.938) was more closely correlated to stature, followed by the mean length of the right clavicle (r=0.846). In females, the average length of bilateral clavicles (r=0.761) was also correlated with a comparatively fair degree as compared to the mean lengths of right (r=0.477) or left (r=0.424) clavicles. The standard of error was least for the average length of the bilateral clavicle.

In northwest India, in the same population, Singh and Sohal worked out a multiplication factor for the calculation of stature in the male population and concluded that it was possible to calculate stature from the length of the clavicle.[1] Jit and Singh, utilizing the same population, concluded that neither a multiplication factor nor a regression formula can be adopted that will estimate the height of an individual with a reasonable degree of accuracy.[2] Yashoda et al. also devised regression equations in a study on a population of north India and found that clavicle length was a good parameter for stature estimation. Per this presentation's research, the sample size in this particular study far exceeds those of other studies conducted on the similar population of northwest India. Together, this population-specific formula will provide an easy tool for stature estimation and can aid forensic research.

Reference(s):

1. Singh B., Sohal H.S. Estimation of stature from the length of clavicle in Punjabis, a preliminary report. *Indian J Med Res*. 1952;40:67-71.

2. Jit I., Singh S. Estimation of stature from clavicles. *Indian J Med Res.* 1956;44:137-55.
3. Yashoda R., Naik S.K., Singh K.A., Murari A. Correlation of stature of adult with the length of clavicle. *J Indian Acad Forensic Med.* 2011;33(3):194-6.

Stature, Northwest Region, Clavicle