H96   Microscopic Age Estimation From the Anterior Cortex of the Femus in Korean Adults

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The objective of this study is to ascertain the usefulness of microscopic age estimation method based upon Korean adults using modified measuring methods from the femur with four histomorphometric variables, such as the most anterior cortical width, osteon population density, and average size of osteon and Haversian canal.

This presentation will impact the forensic community by suggesting the possibility for microscopic age estimation method based upon Korean adults. Tthis study is a first attempt for microscopic age estimation method using the femur in Koreans, so it will be contribute to growth of concern for forensic anthropology of forensic sciences in different countries as well as Korea.

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In studies on microscopic age estimation methods applied to the femur, variety of measuring fields and histomorphometric variables has been suggested. As considering the conditions of skeletal remains excavated from archaeological sites or forensic situations, utilitarian methods with small sampling site against complete cross-section and a few variables for effi- ciently quantifying the remodeling history of the bone were needed to develop. The objective of this pilot study is to ascertain the usefulness of microscopic age estimation method using modified measuring methods from the femur based upon Korean adults. The bone specimens of anterior femoral midshaft were removed from 19 Korean cadavers (10 males and 9 females) in wedge form that one of the saw cuts was kept perpendicular to the long axis of the shaft and depth of cut was limited to anterior half. The age range for the sample is 41 to 82 years with a mean and standard deviation of 62.4 and 12.1 years, respectively. Thick sections of 1-mm were cut from the perpendicular plane of the wedged femoral specimens using a diamond wheel. Then thin sections (less than 100 um thick) per individual were prepared for histological analysis by manual grinding method. Five subpe- riosteal areas of each thin section were analyzed microscopically by indi- cating points (the most anterior point and points 10° and 20° to the left and right) on the glass cover slip of the bone slide. The most anterior cortical width, osteon population density, and average size of osteon and Haversian canal were measured using an Olympus BX-51 light microscope with simple polarizing attachment and image analysis solutions (Image-pro Plus 4.5.1, Media Cybernetics, Inc., Silver Spring, MD, USA) at a magnification of ´100. Statistical regression analysis was performed using age at death as dependent variable. An analysis of covariance found no statistically signif- icant differences in all variables between sexes. In all cases, the strongest associations with age for the pooled sexes were osteon population density and average osteon size (r^2 = 0.654 and 0.554, respectively). For multiple regression method, osteon population density and average osteon size were selected as independent variable and its r^2 and standard error of estimate were 0.746 and 6.460, respectively. These preliminary results indicate that five measuring points and two of four histomorphometric variables can be used to reliably estimate age at death in Korean adults.

Age, Femur, Histomorphology