H75 Age Estimation in the Living: A Test of Six Radiographic Methods

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After attending this presentation, attendees will have an understanding of the different methods available for radiographic age estimation and the accuracy of these methods. This presentation will demonstrate the optimal method to use, given the proposed age of the individual.

This presentation will impact the forensic science community by enhancing understanding about the accuracy of methods of age estimation, which are already in existence, as well as proving to the court itself that radiographic methods of age estimation are reliable enough to be presented to a court of law.

Worldwide, over 51 million children are not registered at birth. The increase in cross-border movements in recent years, both for humanitarian and for economic reasons, has led to an increasing number of people who are either unable or unwilling to provide documentation providing proof of age. This has led to an increasing requirement for age estimation in the living for medicolegal purposes, especially among younger individuals since access to resources relies on their ability to prove age. Traditionally, age estimation in the living has relied on the use of left hand wrist radiographs which use skeletal maturational changes to estimate chronological age in the living.

This presentation will present research which tested radiographs of children of known age from a Scottish population against the commonly used atlases already in existence. The research examines the role of skeletal development in age estimation in relation to four topographical areas of the body: the hand/wrist; the elbow; the knee; and the foot/ankle. The accuracy and reliability of these age estimation methods and their importance in relation to the demands of modern-day practice will be discussed.

This research found that the use of knee and the corresponding atlas of Pyle and Hoer was as accurate for age estimation of females (R^2=0.954) and males (R^2=0.952) as the use of the traditional left hand-wrist radiographs and the Greulich and Pyle atlas (females R^2=0.939, males R^2=0.940).[1,2] This underlines the ability of the practitioner to use radiographs which might already be in existence rather than having more radiographs taken. Finally, by comparing the results for all of the skeletal areas and corresponding atlases, it was possible to devise a guide showing which method is optimal for use in any given situation, allowing the practitioner to choose the most robust approach to age estimation possible.

References:

1. Pyle SI, Hoerr NL. A radiographic standard of reference for the growing knee. Springfield: Charles C. Thomas, 1969.
2. Greulich WW, Pyle SI. Radiographic atlas of skeletal development of the hand and wrist. Stanford: Stanford University Press, 1959.

Age Estimation, Radiographs, Children

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