

Evaluation of bone age measurement of child by Sunlight BonAge system

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Introduction: Bone age measurements are an important marker in the management and treatment of endocrine diseases in children and for evaluating their development. Radiographs of the hand are generally used to evaluate bone age. In this study we measured bone age ultrasonically with BonAge (Sunlight Medical Ltd.) and report the results of comparisons with radiographs.

Subject: The subjects were 70 children who were examined in the Paediatric Department of Dokkyo University Hospital and in whom it was necessary to measure bone age because of suspicion of body height and pubertal abnormalities.

Methods: The measurement of bone age were made with Sunlight BonAge (SBA) during examinations in the outpatient department. In addition, one experienced physician interpreted bone age by the Japanese standard TW2 method (RUS method) and the CASMAS (Computer Aided Skeletal Maturity Assessment System) from radiographs taken of their left hands. And both were compared with results obtained ultrasonically by SBA.

Results: The results between BonAge and TW2 (RUS), and BonAge and CASMAS estimation correlates well ($r=0.90$, $r=0.87$). The inter-measurer error and inter-measurement error were 0.54 ± 0.36 years and 0.51 ± 0.42 years respectively.

Discussion: SBA calculates bone maturity by an algorithm based on measurement of the width (distance) speed of sound (SOS) in bones in the wrist. The results of this study showed good correlations between the data obtained by SBA and both the RUS method and the CASMAS method. Ultrasound-based skeletal development measurement device is non-invasive, quick, accurate and easy to assess the bone age in children aged 5 to 15 years old.

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