

Development of Human Palmar and Digital Flexion Creases

Normal flexion creases of the fingers and palm reflect normal movement and development of the upper limbs during embryonic and fetal life. A study by Stevens and colleagues of the flexion creases in the human fetus has established the time during fetal life when these creases first appear. A hand malformation or specific insult that occurs before the time of crease development may cause secondary alterations in crease patterns of the hand. The presence of creases may also be used to date the age of an abortus.

The authors measured the development of hand creases by examining the hands of 100 human fetuses that had been obtained by random selection after therapeutic abortion. At 7 weeks' gestation, the fingers are separated but the hand is smooth and glove like, without pads, creases, or distinguishing features between the dorsal and volar surfaces. At 8 weeks, the distal interphalangeal and metacarpophalangeal creases are faintly visible. Digital and interdigital pads begin to be seen, and the thumb begins to rotate to another plane. At 9 weeks, the proximal interphalangeal and thenar creases become visible, and the nail beds begin to form. At 10 weeks the digital creases are well formed. The interdigital pads begin to regress, and a depression is seen in the center of the digital pads. Thickenings appear in the palm, and the nails are well de-

Transient Growth Deceleration in Normal Short Children: A Potential Source of Bias in Growth Studies

A child whose growth fluctuates from one 6-month period to the next is more likely to be diagnosed as growth hormone (GH) deficient at the end of the slow growth period than at the end of the rapid growth period. Under these circumstances there is a strong selection bias, and one would expect a regression toward the mean velocity during the 6 months after diagnosis, whether or not the child was treated. To test this hypothesis, the authors followed 21 short children who had 6-month growth velocities < 4 cm/y but whose response to GH stimulation testing was >5 ng/mL and showed that they were not GH deficient. All but three of the children had increases in velocity > 0.5 cm/y during the subsequent 6 months of observation. These increases were significant in both the prepubertal and pubertal groups: the mean growth rates increased from 3.4 to 5.1 cm/y and from 3.4 to 6.3 cm/y,

At 11 weeks, the distal palmar creases appear. At 12 weeks, the proximal palmar creases are seen and the digital pads are still present, but the interdigital pads are gone. By 13 weeks, all palmar and digital creases are well defined, digital pads are regressing, and the thumb is opposable. The digital pads disappear by 15 weeks.

This work establishes the normal pattern and development of digital and palmar creases.

respectively. In growth studies in which children are used as their own controls, this effect must be taken into account.

Polychronakos C, Abu-Srair H, Guyda HJ. *Eur J Pediatr* 1988; 147:582.

Editor's comment—*"Regression toward the mean" is an important aspect of any longitudinal study in which the initial value is not based on a random selection from the population. It stems from unreliability of measurement, as well as from seasonal and other fluctuations. In any growth study in which a treatment is given after a control period, the most likely velocity in the absence of treatment must be estimated. Bias is introduced, however, if the most likely velocity is estimated simply as a continuation of the velocity in the control period.*

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Stevens CA, Carey JC, Shah M, et al. *J Pediatr* 1988;113:128-132.

Editor's comment—*Creases of the hand are examined in all children. With specific dating of the development of these creases, we can much more accurately time insults and abnormalities. This study makes a real contribution to defining normal development.*

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