Pediatric Endocrinology

PEDIATRIC ENDOCRINOLOGY: ADRENAL, THYROID, AND GENETIC DISORDERS

Factors Affecting Thyroid Hormone Changes Over 1 Month After Birth in Preterm Newborns

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Purpose: To analyze factors affecting thyroid hormone changes over 1 month after birth in preterm newborns. **Methods:** Thyroid hormones, including free thyroxine (fT4) and thyroid stimulating hormone (TSH) of 216 preterm newborns (mean gestational age [GA] 33.6±2.6 weeks), were retrospectively reviewed at the 1st and 4th weeks after birth. Preterm newborns were classified into three groups according to the GA (< 28 weeks, group A; 28-32 weeks, group B; 32-36 weeks, group C). The association between thyroid hormone changes and clinical factors was analyzed. **Results:** Preterm newborns with older GA had higher concentrations of fT4 (group A, 0.9±0.2 ng/dL; group B, 1.2±0.2 ng/dL; group C, 1.5±0.3 ng/dL) and TSH (group A, 2.7±3.2 mIU/L; group B, 4.5±3.3 mIU/L; group C, 6.0±3.8 mIU/L), both at the 1st week after birth. fT4 and TSH at the 1st week after birth were positively correlated with the GA (r=0.52, P=0.0001; r=0.30, P=0.0001) and Apgar score at 5 minutes (r=0.31, P=0.0001; r=0.28, P=0.0001). TSH concentration at the 1st week after birth was significantly lower in the abnormal brain sonogram group than in the normal brain sonogram group (4.4±3.7 vs 6.1±3.4 mIU/L, P=0.001); there were no differences at the 4th week after birth between these groups (4.2±2.6 vs 3.4±2.4 mIU/L, P=0.485). Multiple linear regression analysis revealed that GA was positively correlated with fT4 and TSH at the 1st week, and fT4 at 4th week after birth (B=0.08, SE=0.12, P=0.0001; B=0.34, SE=0.15, P=0.029; B=0.02, SE=0.01, P=0.013). Conclusion: Thyroid hormone levels in preterm newborns are mostly within the normal reference value of full-term newborns within 4 weeks of life, and are mainly affected by GA and brain ultrasound abnormalities.

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Food Perception and Differences in Dietary Decision-Making in Youth With Congenital Adrenal Hyperplasia

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Background: Youth with congenital adrenal hyperplasia (CAH) have a higher prevalence of obesity, early adiposity rebound, and increased fat mass. Unsuccessful dietary self-control could contribute to obesity, and understanding food-seeking behavior could therefore guide prevention. Dietary decision-making involves key brain regions such as the limbic system and the prefrontal cortex, which are associated with choice and reward. These regions (i.e., prefrontal cortex, amygdala, hippocampus) can be smaller in volume in CAH patients. However, little is known about dietary decision-making in CAH. We hypothesized that CAH youth would exhibit differences in dietary decision-making and aimed to study food choices in CAH youth compared to controls.

Methods: 37 CAH youth (12.2 ± 3.1 y, 60% male, BMIz 1.6 ± 0.8) and 100 controls (11.7 ± 2.4 y, 57% male, BMIz 0.9 ± 1.2) completed a behavioral computer-based food choice task. They rated 30 high- and 30 low-calorie food cues for tastiness, healthiness, and liking. Food pairs discordant for taste and health ratings were generated, and youth were asked to choose the item they wanted to eat. Cursor-trajectory analyses measured area under the curve (AUC) and maximum deviation time (MDT), with successful choice trials evident when the healthier food was chosen. Based on individual ratings for food cues, β-coefficients for ratings predicting food preference were generated.

Results: CAH youth and controls did not show differences in food ratings ($P > 0.30$ for all) or in the percentage of successful trials of total choice trials ($P = 0.16$). However, CAH youth showed larger mean AUCs compared to controls [$T(135) = 2.15$; $P = 0.03$] suggesting that they may experience more conflict and exert more cognitive effort in decision-making. CAH youth also had longer mean MDTs [$T(102.3) = 2.59$; $P = 0.01$] in successful choice trials, indicating a later time at which a final decision was made. β-health and β-taste predicting food preference did not differ between groups, and β-health was correlated with successful choice trials in both CAH ($r = 0.38$, $P = 0.02$) and controls ($r = 0.48$, $P < 0.01$). However, β-taste was negatively correlated with successful choice trials in controls only ($r = -0.42$, $P < 0.01$; CAH $r = -0.22$, $P = 0.18$).

Conclusion: Although youth with and without CAH had similar perceptions of food, CAH youth may exert greater cognitive effort and experience more conflict in dietary decision-making. This could suggest that factors inherent to CAH such as abnormal neural pathways, or disease treatment, could affect the cognitive control of food choices in CAH youth.