

ENDObytes

A monthly summary and commentary of recent topical publications in Paediatric Endocrinology from Professor Wayne Cutfield and Associate Professor Paul Hofman of The Liggins Institute, University of Auckland, Auckland, New Zealand.

Screening for sleep disordered breathing and excessive daytime sleepiness in adolescent girls with polycystic ovarian syndrome.

Nandalike K, Strauss T, Agarwal C, Coupey SM, Sin S, Rajpathak S, Cohen HW, Arens R. J Pediatr 2011; 159: 591-6.

Summary

In a study of 103 adolescent girls with polycystic ovarian syndrome (PCOS) almost half suffered from sleep-disordered breathing (SDB) and excessive daytime sleepiness (EDS). The study population included girls 13-18 yrs of age diagnosed with PCOS defined as; obese (BMI >30) and 2 of the following; elevated triglycerides, reduced HDL, elevated BP and hyperglycaemia/impaired fasting glucose. PCOS girls were identified by retrospective chart review at Montefiore Children's Hospital and controls girls from Clinical Looking Glass. Control girls were age, ethnicity and BMI z- score matched to PCOS girls. There was no difference in adenotonsillectomy history between the two groups SDB and EDS were assessed by (7% in COS and 9% in controls). Investigator supervised questionnaires. PCOS girls had higher rates of SDB (46% vs 28%, $p < 0.01$) and EDS (54% vs 36%, $p < 0.01$). Compared with controls girls those with PCOS and SDB or EDS had higher BMI z-scores, greater insulin resistance (assessed by HOMA) and a much higher prevalence of the metabolic syndrome (43% vs 16% for SDB and 39% vs 15%). PCOS girls who suffered from SDB or EDT were more likely to be receiving metformin or contraceptives. Metabolic syndrome was independently associated with SDB (OR 3.2) and EDS (OR 4.5).

Commentary

This study identifies further sequelae of PCOS beyond the well known cardiovascular (hypertension, heart disease and stroke) and metabolic (type 2 diabetes mellitus and dyslipidemia) sequelae. In assessing obese PCOS girls it would seem prudent to include questions about SDB and EDS which may be disruptive to learning and attention related daytime activities at each clinic visit. Of course the obvious question raised by this study is "might there be an increased risk of SDB and EDS attributable to PCOS syndrome independently of obesity and the metabolic syndrome?" The study data does not allow this question to be addressed. Virtually all participants (92%) were overweight or obese. Almost 25% were receiving metformin further confusing assessment of the impact of the metabolic syndrome. It is most likely that SDB and EDS in PCOS is attributable to obesity and/or the metabolic syndrome both of which are features of PCOS, rather than some other inherent characteristic of PCOS itself.

Fractures during childhood and adolescence in healthy boys: relation with bone mass, microstructure, and strength.

Chevalley T, Bonjour B, van Rietbergen B, Ferrari S, Rizzoli R. J Clin Endocrinol Metab 2011; 96: 3134-42.

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Summary

In cohort of 176 healthy Caucasian Swiss boys followed from mid-childhood through adolescence those with lower areal bone mineral density (aBMD) at the lumbar spine, femoral neck and distal radius in childhood were more likely to suffer from future fractures. The boys were followed from 7.6 (range 6.5 to 8.5) yrs of age to 15.2 yrs. Dietary calcium, protein and physical activity were assessed by questionnaire at both ages. Between 7.4 and 8.5 yrs half of the boys received calcium supplementation as part of another study. There were a total of 156 fractures that occurred in 87 boys. At 7.6 yrs of age aBMD was reduced in all measured sites (radial metaphysis, radial diaphysis, femoral neck, femoral diaphysis, total hip and L2-4 spine) in those that suffered from fractures. AT 15.2 yrs of age aBMD was reduced at all sites except the distal radius. In addition at 15.2 yrs peripheral quantitative CT was performed that showed those with a fracture history had reduced tibia and radius trabecular volumetric bone density with reduced bone strength as shown by reduced stiffness and failure load. The authors conclude that childhood defects in bone mass, microstructure and strength could contribute to childhood and adolescent fractures.

Commentary

In childhood it is assumed that the nature and severity of the injury is almost solely responsible for the risk of limb fracture. This study adds to those performed in adults that show that inherent variation in bone density and strength have a small influence on fracture risk through childhood and adolescents. The small risk is based upon odd ratios of fracture of only 1.46 to 1.64 in those with lower aBMD in childhood. Unfortunately the authors do not determine whether reduced BMD in childhood tracks reliably into adolescence. Although aBMD values were corrected for height and weight very slim children are likely to have reduced aBMD as shown in very slim women and be at a higher fracture rate. It would have been more helpful if the authors had better characterised those with repeated fractures to try and identify those with more significant defects in bone density or strength.

Detection of antipituitary and antihypothalamus antibodies to investigate the role of pituitary or hypothalamus autoimmunity in patients with selective idiopathic hypopituitarism.

De Bellis A, Pane E, Bellastella G, Slnisi AA, Colella C, Giordano R, Giavoli C, Lania A, Ambrosio MR, Di Somma C, Zatelli MC, D Arvat E, Colao A, Bizzaro A, Bellastella A. J Clin Endocrinol Metab 2011; 75: 361-66.

Summary

In a study of 66 adults with selective idiopathic hypopituitarism 27% were found to have high titres of either antipituitary antibodies (APA) or antihypothalamic antibodies (AHA), thus antibodies to these two organs may better characterise an unrecognised autoimmune hypopituitarism. Adults aged 25-44 yrs with isolated hormone hypopituitarism (27 with ACTH deficiency, 20 with GH deficiency and 19 with hypogonadotropism) were studied. Head MRI was normal in most (62%) with partial empty sella in the remainder (38%). None had classical MRI findings of pituitary stalk thickening frequently seen in autoimmune hypophysitis. APA and AHA were measured by indirect immunofluorescence of young baboon pituitary and hypothalamus tissue. Of the 27 patients with ACTH deficiency, 34% had either APA (15%) or HPA (19%). In the 20 with GH deficiency 25% had APA, and in the 19 with hypogonadotropic hypogonadism 21% had APA.

Commentary

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This study extends the observations made of frequently detectable APA antibodies in cases of idiopathic hypopituitarism to include AHA particularly in cases of ACTH deficiency. Although autoimmune hypophysitis is less common in children it is likely to escape recognition as the cause of hypopituitarism. APA and AHA antibodies are likely to be of greatest value in determining the site of autoimmunity in cases of ACTH deficiency which was the commonest form of isolated autoimmune hypopituitarism. Whilst APA and AHA appear to be useful diagnostic tests they remain research tools. These antibody tests are semi-quantitative, labour intensive, non-standardised and require access to pituitary and hypothalamus tissue to conduct.