

Theme: Pediatric Endocrinology

Air pollution predisposes to adverse metabolic profile in children (*Pediatr Obes.* 2018;13:54-62)

With increasing globalization, there are increasing concerns of air pollution on human health. The effect of pollutants (nitric oxide, particulate matter and traffic-related pollutants) were assessed in 429 overweight and obese African-American youth living in California. Air pollutants were associated with higher fasting insulin, lower insulin sensitivity and higher fasting glucose ($P < 0.05$). The authors concluded a higher risk of type-2 diabetes among overweight and obese children exposed to air pollution.

ACE inhibitors and statins in type-1 diabetes (*N Engl J Med.* 2017;377:1733-45)

Adolescents with type-1 Diabetes may develop microalbuminuria, which predisposes them to future cardiovascular and renal morbidity. In this placebo controlled trial, 443 adolescents with type-1 Diabetes were randomized to receive ACE inhibitors and/or statins, and monitored 6 monthly over next 2-4 years. The albumin:creatinine excretion remained unaffected with ACE inhibitors, statins or combination therapy. The lipid profile improved in the group receiving statins; however, there was no difference noted in carotid intima-media thickness, other cardiovascular markers, glomerular filtration rate, or progression of retinopathy between groups. The use of these drugs in type 1 Diabetes was not found to be beneficial for most functional outcomes.

Metformin in type-1 diabetes (*J Clin Endocrinol Metab.* 2017;102:4448-56)

Metformin has been shown to have a protective effect on cardiovascular morbidity in type-2 diabetes. The evidence for its use is less robust among patients with type-1 diabetes. Ninety children (age 8-18 years) with type-1 diabetes and BMI >50th centile were randomly assigned to receive metformin (1 g twice daily) or placebo for twelve months in this trial. The use of metformin was associated with significant improvement in glyceryl trinitrate-mediated dilatation of brachial artery (by 3.3% units), reduction in insulin dose (0.2 U/kg/d) and reduction in glycated hemoglobin (1%). The carotid/aortic intima media thickness, BMI, lipids, blood pressure and other cardiovascular risk factors were similar between both groups. Patients reported higher incidence of gastrointestinal side effects with metformin use. The authors concluded further consideration before use of metformin in type-1 diabetes.

Prediction of spontaneous puberty in Turner syndrome (*Horm Res Pediatr.* 2017;doi: 10.1159/000485321. [Epub ahead of print])

Spontaneous onset and normal progression of puberty is known to occur in a subset of girls with Turner syndrome, usually among mosaics and less frequently among those with 45, X. This study evaluated 110 girls (mean age 10.7 years) with Turner syndrome over a 20 year period (mean follow-up 5.9 years).

Their gonadotropins, karyotype and ovarian sizes were recorded during follow-up. Spontaneous puberty (thelarche) and menarche were noted in 48% and 20% girls, respectively, with lesser proportion among those with 45,X. Ovarian size showed poor correlation with prediction of spontaneous puberty. A cut off of FSH >6.7 IU/L between 6-10 years was associated with higher probability of delayed menarche. The authors precluded the role of karyotype alone in predicting spontaneous puberty in Turner syndrome.

Growth outcomes with early therapy in X-linked hypophosphatemic rickets (*Pediatr Endocrinol Rev.* 2017;15:119-21)

X-linked hypophosphatemic rickets (XLH) is a cause of refractory rickets which affects can predispose to growth abnormalities and skeletal deformities. This paper reported the growth patterns of 127 participants with XLH across 49 centers. All had normal length at birth. Height decelerated till mean age of 4.3 years (height SDS -3.2) to ultimately show catch-up by +1.3 height SDS until onset of puberty. Among 10/18 children treated with calcitriol and phosphate before 18 months of age, the height SDS improved from -2.2 at 4.4 yr to -1.4 around puberty to achieve adult height SDS of -2.4. Early treatment was shown to improve growth rate in these children.

Liraglutide for reducing cardiovascular risk in polycystic ovary syndrome (*Endocr Connect.* 2018;115-21)

Liraglutide is a glucagon-like peptide 1 that is used in type-2 diabetes. Authors investigated its role in 72 overweight women with polycystic ovary syndrome in a placebo controlled trial where liraglutide was given at 1.8 mg/day for 26 weeks. Cardiac biomarkers like atrial natriuretic peptide (ANP), adrenomedullin (ADM), copeptin and insulin resistance were estimated. Significant reduction in ANP (25%) and ADM (6%), unlike copeptin, were noted in the intervention group. A reduction in ANP significantly correlated with an increase in heart rate on regression analysis.

Growth hormone in Juvenile idiopathic arthritis (*J Clin Endocrinol Metab.* 2017;102:4578-87)

Growth hormone has been found safe and beneficial in juvenile idiopathic arthritis (JIA). Growth outcomes of 53 patients with JIA receiving long term corticosteroids were analyzed after GH therapy for a median duration 6.5 years. Height SD scores improved from -2.9 at baseline to -1.7 in adulthood with corrected height SD score at -1.3 (IQR, -3.0 to -0.2) after therapy. Earlier age of Growth hormone initiation, higher height at initiation and lesser disease inflammation during follow-up (lower serum C-reactive levels) improved height outcomes independently.

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