

surgery. **Results:** PPGLs had a higher prevalence of VF (43% [21/49]) than non-functional AT (16% [10/61]; $p = 0.002$). PPGLs were an independent risk factor for VF after adjusting for age and sex (odds ratio, 4.47; 95% confidence interval, 1.76–11.3; $p = 0.001$). In PPGLs, BMD expressed as Z score at the lumbar spine was significantly improved at follow-up (before -0.5 ± 1.0 , after -0.2 ± 0.9 ; $p = 0.005$). **Conclusion:** This study demonstrates that PPGLs are an independent risk factor for VF and that their surgical resection contributes to the improvement of BMD in the trabecular bone. These observations support the notion that PPGLs are an emerging cause of secondary osteoporosis.

Pediatric Endocrinology

PEDIATRIC OBESITY, THYROID, AND CANCER

Prevalence and Incidence of Obesity in Children and Young Adults in Korea: The Kangwha Study

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MON-106

Childhood obesity is a major global concern, arousing a variety of health problems and high social costs. The prevalence of childhood obesity has increased, but plateaued during the first decade of the 21st century in developed countries. Many previous studies reported cross-sectional data with prevalence of obesity, but researches about incidence of obesity based on longitudinal data is insufficient, especially in Korean population. In this study, we analyzed prevalence and incidence of overweight and obesity in Korean children and young adults from a prospective cohort study. We analyzed data from the Kangwha study, which is a community-based prospective cohort study began in 1986 with 6-year-old, first-grade elementary school students in Kangwha county, South Korea. The Kangwha study is a dynamic cohort, which the number of participants was expanded several times during the follow-up period. The study was started with 482 children, which expanded to total 1,223 participants. The participants were examined annually until 1997, which is 17 years of age. Four adulthood follow-up studies were performed in 1999, 2005, 2010, and 2015. The data includes a 30-year period (1986–2015), with total 16 observations conducted. We used the 2007 Korean National Growth Charts to determine cutoffs for normal weight, overweight, and obesity in children. In adulthood, Asia-Pacific classification of obesity from World Health organization (WHO) recommendation was applied to define overweight and obesity. When the children were in their first-grade of elementary school, prevalence of overweight was 1.04% and obesity was 0.62%. Prevalence of overweight and obesity increased since age 10 (fifth-grade in elementary school) (overweight 4.44%, obesity 1.18%), reaching 7.34% and 3.39% in age 12 (first-grade in middle school), and 9.5% and 5.37% in age 17 (third-grade in high school). Prevalence of overweight and obesity in girls were higher than in boys throughout childhood. Annual incidence of obesity showed small peak at entering middle

school (2.1%, age 12), and another peak at third-grade in high school (2.33%, age 17). Also, a positive correlation was found between body mass index (BMI) in younger ages and follow-up BMI. Prevalence of overweight and obesity increased since senior years of elementary school, and more prominent in girls. Detailed study design and larger population would be required for subsequent investigations.

Bone and Mineral Metabolism

BONE AND MINERAL CASE REPORTS I

CYP24A1 Mutation Masking Malignancy Mediated Hypercalcemia

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Background: Mutations in CYP24A1, resulting in reduced conversion of 1,25(OH)₂D to its inactive metabolite 24,25-(OH)₂D₃, are rare causes of parathyroid hormone (PTH)-independent hypercalcemia. While manifestations may range from the severe idiopathic infantile hypercalcemia due to biallelic mutations, heterozygous loss-of-function mutations causing milder phenotypes are increasingly reported in adults. Elevated 1,25(OH)₂D and hypercalciuria often accompanied by a history of nephrolithiasis are characteristic. Worsening hypercalcemia, under conditions such as pregnancy or sunlight exposure that enhance 1,25(OH)₂D and 25(OH)D production, respectively, has been described in CYP24A1 mutations. We describe a patient with hypercalcemia and a history of lymphoma who was found to have elevated 25-OH-D₃ and low 24,25-(OH)₂D₃ levels, suggesting a mutation in CYP24A1. **Clinical Case:** An 80 year-old Caucasian male with history of indolent non-Hodgkin lymphoma diagnosed in 2016, well controlled after several courses of chemotherapy, was referred for recurrent hypercalcemia. Laboratory studies showed levels of 1,25(OH)₂D of 78 (18–72 pg/mL) and PTH 22 (10–65 pg/mL) with calcium ranging from 10.3 to 12.6 (8.5–10.1 mg/dL), an undetectable PTHrP, 25(OH)D level of 32.9 (30–100 ng/mL), and 24-hour urinary calcium of 378mg. He was treated with high dose prednisone for presumed 1,25(OH)₂D-mediated hypercalcemia. Despite initial good response, hypercalcemia became progressively difficult to control requiring escalating doses of steroids. Repeat 1,25(OH)₂D levels improved to 30–40 pg/mL, but subsequently rebounded to >150. Oncologic re-evaluation found low-grade follicular lymphoma in inguinal lymph nodes, which were thought to be the source of 1,25(OH)₂D overproduction. Detailed history and records review, however, revealed that onset of hypercalcemia dated back to 2006, concurrent with the development of several episodes obstructive uropathy due to stones. These events preceded the diagnosis of lymphoma by a decade, and resulted in CKD stage 4. Family history is notable for nephrolithiasis in his father and son. We suspected CYP 24A1 mutation. Vitamin D metabolite analysis demonstrated a 25-OH-D₃ of 27 (20–50 ng/mL) and 24,25-(OH)₂D₃ of 0.56 ng/mL with

a ratio elevated to 48.21 (<25), indicative of a defect in vitamin D degradation that potentially exacerbates oversupply of 1,25(OH)₂D, mediated via its reduced metabolism. Genetic evaluation is in progress. After initiation of treatment with Rituximab, his serum calcium levels declined along with regression of his lymphoma. **Conclusion:** Although mutations in CYP24A1 are an uncommon cause of hypercalcemia, they should be considered in the differential diagnosis of elevated 1,25(OH)₂D levels without a clear source, as confirming this diagnosis strongly impacts treatment decisions and clinical outcome.

Cardiovascular Endocrinology

HYPERTRIGLYCERIDEMIA; INFLAMMATION AND MUSCLE METABOLISM IN OBESITY AND WEIGHT LOSS I

Association Between Baseline Fitness and Changes in Physical Activity and Weight Loss in an 18-Month Behavioral Weight Loss Program

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SAT-575

BACKGROUND: Baseline cardiovascular fitness may be a significant predictor of future success in a comprehensive behavioral weight loss program (BWL). Yet, few studies have examined the association between baseline fitness and future weight loss.

PURPOSE: To determine the association between baseline fitness and changes in body weight and device-measured levels of moderate-to-vigorous physical activity (MVPA) during a BWL.

METHODS: Adults (n=85) were enrolled in an 18-month BWL combining a calorie-restricted diet, group-based behavioral support, and 6 months of supervised exercise (progressing to 300 min/wk of moderate-intensity) followed by 12 months of unsupervised exercise. Data from 60 completers (age 41.0±9.5 years, BMI 34.6±4.2 kg/m², 80% female) were used in this analysis. MVPA was measured over 1 week with the Sensewear Armband at months 0, 6, 12, and 18. Fitness (VO₂max) was measured on a treadmill using indirect calorimetry and categorized based on published age and sex norms (Physical Fitness Specialist Certification Manual, 1997). A linear mixed effects model with unstructured covariance was used to examine the association between baseline fitness category and changes in body weight, total MVPA, and MVPA in bouts ≥10 min at the four time points.

RESULTS: Of the 60 completers, 33% (n=20) were classified as having *very poor* fitness, 45% (n=27) *poor*, 18% (n=11) *fair*, 3% (n=2) *good*, and 0% (n=0) *excellent* or *superior*. Due to the low proportion of participants categorized as having *fair* or better fitness, we created a binary fitness variable (*very poor* vs. *poor or better*). Baseline BMI was higher in those in the *very poor* category compared to those in the *poor or better* category (36.2±4.2 vs 33.7±4.0, p=0.03). There were no significant differences between the two fitness categories in weight change at 6 or 12 months. However,

at 18 months, mean weight loss was 4.3±1.7 kg in those in the *very poor* category and 8.2±1.2 kg in those in the *poor or better* category, with a marginally significant between-group difference (p=0.07). There were no differences in changes in total or bout MVPA. However, those with *very poor* fitness had lower bout MVPA at baseline vs. those with *poor or better* fitness (16±20 vs 33±31 min/d, p=0.03). At 18 months, both groups increased bout MVPA, however bout MVPA remained lower in the *very poor* vs. *poor or better* group (24±29 vs 42±29 min/d, p=0.03). Total MVPA showed a similar pattern.

CONCLUSION: Baseline fitness may moderate 18-month weight loss, as those with *very poor* fitness lost less weight compared to those with *poor or better* fitness levels. Those with *poor or better* fitness at baseline achieved significantly higher mean levels of MVPA at 18 months compared to those with *very poor* fitness. Participants with *very poor* fitness at baseline may require additional exercise support during a BWL to achieve the high levels of MVPA recommended for weight loss maintenance.

Neuroendocrinology and Pituitary

NEUROENDOCRINE & PITUITARY PATHOLOGIES

Acute and Long Term Evaluation of Pituitary Functions in Patients with Advanced Heart Block Requiring Pacemaker Implantation: A Pilot Study

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SUN-293

Abstract:

Background: Neuronal hypoxia and neuro-inflammation accompanying conditions like traumatic brain injury, stroke, cerebrovascular accidents and sub-arachnoid haemorrhage has been associated with hypopituitarism. Neuronal insults of similar magnitude and hypopituitarism [Growth Hormone (GH), gonadotropin and TSH deficiency in 27.2%, 9.0% and 2.2% patients respectively] has also been noted in a single study till date conducted in patients of ventricular arrhythmias requiring cardiopulmonary resuscitation¹. Patients with heart block, a more frequent form of cardiac arrhythmia usually presents with haemodynamic compromise and may be predisposed for developing either acute or delayed hypopituitarism which has never been studied before.

Aims and objective: Our study was aimed at exploring whether pituitary dysfunction occurs in patients presenting with heart block and requiring pacemaker implantation. We analysed anterior pituitary functions in these cohort of patients during acute hospitalization and later during follow.

Study design: Cross sectional prospective study

Materials and Methods: Fifty-one patients were included in the study (mean age-65.98±10.9years; 34 men & 17 women). Pituitary hormonal profile was done within 48 hours of presentation and after a mean follow up of 12.52 ± 2.2 months. Total T3, total T4, free T4, TSH, FSH, LH, Testosterone (in men), Estradiol (in women), Prolactin, and random Cortisol were measured in all participants at baseline and in follow-up. Fixed dose Glucagon