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# Guided Posters

importance of this vitamin in the body we have analysed its levels in obese patients which were going to follow a VLCD (600 kcal) before undergoing bariatric surgery. The patients followed a VLCD during 4 weeks before the surgery. The values of vitamin D were analysed at two different moments: before beginning the diet and after the diet, 4 weeks later.

#### Method

We have designed a prospective observational study; 18 patients were analysed with IMC > 35 kg/m<sup>2</sup> with associated comorbidity or IMC > 40 kg/m<sup>2</sup>, between 18 and 60 years old, candidate for bariatric surgery with laparoscopic gastric by-pass. Vitamin D concentrations were monitored at two different moments: 1 month before surgery and at the moment of surgery, 4 weeks after the VLCD.

#### Objective

To establish whether there are statistically significant variations in the values of vitamin D before and after following a VLCD.

#### Results

We obtain an average level of vitamin 25 (OH) D of 16,31 ng/ml in the analytical evaluation 1 month before surgery and 21,32 ng/ml at the time of the surgery, which takes place at the end of the VLCD. Statistically significant differences are observed between the levels of vitamin 25 (OH) D 1 month before surgery and at the time of the chirurgic act.

#### Conclusions

According to the results, patients that follow a 4-week VLCD significantly improve the levels of vitamin 25 (OH)D in blood. Those levels do not reach a normal level after the diet, however it is evident the benefit of the recommended process, and it would be interesting to evaluate in the long term if such a tendency remains.

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## GP49

### Upper gastrointestinal symptoms, endoscopic and pathological features, and serum gastrin and chromogranin A levels in patients with primary hyperparathyroidism

Osman Ersoy<sup>1</sup>, Berna Evranos Ogmen<sup>2</sup>, Sefika Burcak Polat<sup>3</sup>, Levent Ozturk<sup>5</sup>, Berrak Gumuskaya Ocal<sup>4</sup>, Bekir Cakir<sup>3</sup> & Reyhan Ersoy<sup>3</sup>  
<sup>1</sup>Yildirim Beyazit University, Faculty of Medicine, Ataturk Education and Research Hospital, Department of Gastroenterology, Ankara, Turkey; <sup>2</sup>Ataturk Education and Research Hospital, Department of Endocrinology and Metabolism, Ankara, Turkey; <sup>3</sup>Yildirim Beyazit University, Faculty of Medicine, Ataturk Education and Research Hospital, Department of Endocrinology and Metabolism, Ankara, Turkey; <sup>4</sup>Yildirim Beyazit University, Faculty of Medicine, Ataturk Education and Research Hospital, Department of Pathology, Ankara, Turkey; <sup>5</sup>Yildirim Beyazit University, Faculty of Medicine, Ataturk Education and Research Hospital, Department of Anesthesiology, Ankara, Turkey.

#### Introduction

Upper gastrointestinal (UGI) symptoms are frequently encountered in patients with primary hyperparathyroidism (PHPT). Some of these symptoms may improve after PHPT treatment, while hypercalcemic state may also cause permanent effects. We aimed to evaluate UGI symptoms, UGI endoscopic and pathologic features and determine the relationship between these features with serum chromogranin A (CgA) and gastrin in PHPT patients.

#### Methods

Seventy-one patients diagnosed with PHPT were included in the study after exclusion of patients who refused UGI endoscopy, had an UGI surgery or used drugs that affect serum chromogranin A or gastrin. Patients were questioned regarding UGI symptoms. Serum CgA and gastrin were measured. Endoscopy was performed and gastric biopsy specimens were taken to evaluate atrophic gastritis.

#### Results

There were 60 females and 11 males, and median age was 52 years. Mean serum CgA and gastrin levels were 134.10 ± 19.43 ng/ml (28-620) and 219.39 ± 48.6 pg/ml (14-2255), respectively. Dyspepsia, epigastric pain and weight loss were the most common symptoms and presented in 61, 51.7 and 46.6% of patients, respectively. Endoscopy was normal in 25(35.2%) patients. Erosive antral gastritis, atrophic gastritis, gastric ulcers, duodenal ulcers, reflux gastritis and nodular gastritis were present in 14 (19.7%), 12 (16.9%), 6 (8.5%), 5 (7%), 4 (5.6%) and 4 (5.6%) patients, respectively. Intestinal metaplasia, gastric atrophy, gastric neuroendocrine tumor and Helicobacter pylori infection were detected in 29.2, 20, 1.4 and 66.2% of patients, respectively. Serum CgA was similar in patients with and without atrophic gastritis, while serum gastrin was higher in patients with atrophic gastritis (P=0.024). Presence of intestinal metaplasia and Helicobacter pylori infection did not affect serum CgA and gastrin levels.

#### Conclusion

Dyspeptic symptoms are common in patients with PHPT. The frequencies of atrophic gastritis and peptic ulcers are increased. We think that patients with

PHPT should be questioned for UGI symptoms and evaluated with UGI endoscopy when needed.

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## GP50

### Localisation of parathyroid adenomas using <sup>11</sup>C-methionine-PET/CT when conventional imaging methods are negative

Lassi Nelimarkka<sup>1,7</sup>, Aapo Ounaslehto<sup>7</sup>, Eija Eloranta<sup>4</sup>, Leena Moilanen<sup>5</sup>, Saija Hurme<sup>3</sup>, Marko Seppänen<sup>2,6</sup> & Pirjo Nuutila<sup>1,2</sup>

<sup>1</sup>Turku University Hospital, Department of Medicine, Division of Endocrinology, Turku, Finland; <sup>2</sup>Turku PET Centre, Turku University Hospital, Turku, Finland; <sup>3</sup>Department of Biostatistics, University of Turku, Turku, Finland; <sup>4</sup>Department of Medicine, Division of Medicine and Pulmonary Diseases, Oulu University Hospital, Oulu, Finland; <sup>5</sup>Division of Endocrinology, Department of Medicine, Kuopio University Hospital, Kuopio, Finland; <sup>6</sup>Department of Nuclear Medicine, Turku University Hospital, Turku, Finland; <sup>7</sup>Department of Medicine, University of Turku, Turku, Finland.

In primary hyperparathyroidism (pHPT) an exact localization of the pathological parathyroid gland(s) is essential before minimally invasive parathyroidectomy. We have previously shown in a small group of pHPT patients, that <sup>11</sup>C-methionine-PET/CT provides additional information if <sup>123</sup>I-<sup>99m</sup>Tc-sestamibi (MIBI) scan remains negative. The aim of the present study was to evaluate the clinical value of <sup>11</sup>C-Met-PET/CT in a larger pHPT patient cohort.

#### Methods

Totally 89 patients with pHPT (66 females, 23 males, age 18-81 years) and negative or inconclusive localisation findings with <sup>123</sup>I-<sup>99m</sup>Tc-MIBI-SPECT/CT (78.7%) or <sup>99m</sup>Tc-MIBI-SPECT/CT (21.3%) were studied with <sup>11</sup>C-Met-PET/CT. Most of the patients (87.6%) were surgical treatment naive and the rest of them (12.4%) were previously operated 1-2 times.

#### Results

<sup>11</sup>C-Met-PET/CT revealed the pathologic parathyroid gland in 48 (60.8%) of the 79 surgically treated patients. Totally 26 patients (32.9%) had a negative <sup>11</sup>C-Met-PET/CT finding and 16 of them had further explorative surgery, whereas 10 of these Met-PET negative patients were not operated, but treated conservatively instead. In five cases (6.3%) Met-PET detected a false-positive finding, i.e. the pathological parathyroid gland was found in another location. On a per-lesion level PET results were 48 true positive (60.8%) and 21 false negative (26.6%). The lesion-based sensitivity was 75.4% (positive predictive value 94.6%) and specificity 40.0% (negative predictive value 10.5%). The diagnostic accuracy of <sup>11</sup>C-Met-PET/CT in this study was 73%. Based on the histological examinations 67 adenomas (84.8%) and six hyperplastic (7.6%) parathyroid glands were found. In five cases the finding was normal parathyroid tissue or unspecified. Ten patients (12.7%) had more than one pathological parathyroid glands. There were no parathyroid carcinomas detected in this study. Totally 79 patients had parathyroid surgery and 55 (69.6%) of them were biochemically cured, but in 16 patients (20.3%) pHPT persisted and in eight patients (10.1%) the postoperative status remained unknown.

#### Conclusion

<sup>11</sup>C-methionine-PET/CT offers an additional noninvasive imaging method to localize hyperfunctioning parathyroid glands in a situation when conventional imaging methods <sup>99m</sup>Tc or <sup>123</sup>I-<sup>99m</sup>Tc-sestamibi SPECT/CT fail or are equivocal.

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## GP51

### Calcium to phosphorous ratio (Ca/P) as helpful index to recognize primary hyperparathyroidism, but not primary hypoparathyroidism: a big-data approach

Sara De Vincentis<sup>1,2</sup>, Daniele Santi<sup>1,2</sup>, Vincenzo Rochira<sup>1,2</sup>, Monica Setti<sup>3</sup>, Simonetta Tagliavini<sup>4</sup>, Manuela Varani<sup>4</sup>, Tommaso Trenti<sup>4</sup>, Manuela Simoni<sup>1,2</sup> & Bruno Madeo<sup>1,2</sup>

<sup>1</sup>Unit of Endocrinology, Department of Biomedical, Metabolic and Neural Sciences, University of Modena and Reggio Emilia, Modena, Italy; <sup>2</sup>Unit of Endocrinology, Department of Medicine, Endocrinology, Metabolism and Geriatrics, Azienda OU of Modena, Modena, Italy; <sup>3</sup>Service of Clinical Engineering, Azienda USL of Modena, Modena, Italy; <sup>4</sup>Department of Laboratory Medicine and Pathological Anatomy, Azienda USL of Modena, Modena, Italy.

**Background**

Primary hyperparathyroidism (HyperPT) and primary hypoparathyroidism (HypoPT) are often underdiagnosed. Several strategies have been investigated in the past in order to identify diagnostic parameters, although the diagnosis of both HyperPT and HypoPT remains challenging so far, especially in asymptomatic patients. Calcium (Ca) and phosphorus (P) are inversely related together, thus the Ca/P ratio could be an useful tool to define these conditions. Recently, we proposed for the first time a cut-off of 3.5 for Ca/P ratio for the diagnosis of HyperPT.

**Aim**

To evaluate the diagnostic value of the Ca/P ratio for HyperPT and HypoPT through a big-data approach.

**Methodology**

A retrospective, observational, case-control study on big-data was carried out. All examinations of parathyroid hormone (PTH), Ca and P performed at the laboratory of Modena Hospital from 2010 to 2016 were consecutively included. We considered only patients between 18 and 90 years of age. Laboratory ranges of normality for both PTH and Ca were used to divide records in HyperPT, HypoPT and controls.

**Statistical analysis**

The diagnostic accuracy of Ca/P ratio was investigated using receiver operator characteristics (ROC) curves in order to define cut-off points, which show higher sensitivity and specificity for the identification of affected patients.

**Results**

46 597 records were considered. 576 HyperPT (1.2%), 323 HypoPT (0.7%) and 45 698 controls (98.1%) were found. Ca/P ratio was significantly different among groups ( $P < 0.001$ ). In particular, Ca/P ratio was significantly higher in HyperPT than controls ( $P < 0.001$ ). For the diagnosis of HyperPT, the threshold of 3.17 for Ca/P ratio was obtained by means of the ROC curve analysis, with 85% of both sensitivity and specificity. HypoPT showed lower Ca/P ratio compared to controls ( $P < 0.001$ ), although no useful threshold for the diagnosis was found at ROC curve because of the low sensitivity.

**Conclusions**

We confirm the high sensitivity and specificity of Ca/P ratio for the diagnosis of HyperPT using the largest cohort of patients available so far in the literature. On the contrary, Ca/P ratio does not contribute to identify patients with HypoPT and further researches are needed to better describe this condition. In conclusion, Ca/P ratio is a simple and inexpensive diagnostic tool to recognize HyperPT.

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**Cardiovascular & Lipid Endocrinology****GP52****Liraglutide prevents right ventricle hypertrophy by avoiding ACE1 & ACE2 reduction in an experimental model of idiopathic pulmonary fibrosis**

Juan Fandiño, Laura Toba, Hugo Ogando, Yolanda Diz, Lucas González & Federico Mallo

Biomedical Research Centre (CINBIO, Vigo, Galicia, Spain).

The Glucagon-like peptide-1 (GLP-1) receptor is expressed in the lung having a very important role in the modulation of the Angiotensin Converting Enzymes (ACEs). ACE1 cleaves angiotensin-I into angiotensin-II, which is converted by ACE2 to Ang(1-7). Ang(1-7) has vasodilating effects. The Idiopathic Pulmonary Fibrosis (IPF) is characterized by excessive extracellular matrix deposition disrupting the alveolar architecture and physiology. IPF develops by a sequence of inflammation multifocal process that leads to a fibrotic response. IPF presents pulmonary hypertension and right ventricle hypertrophy.

The aim of this study is to elucidate the effect of precocious treatment with LIR during the inflammatory phase of IPF in ACE1 & ACE2 in the late fibrotic phase in an experimental model of IPF.

IPF was induced in rats by a single intra-tracheal instillation of Bleomycin (BLM, 2.5 mg/kg) on day 0 (D0). From day -1 to day 6, animals were treated with Liraglutide (LIR, 100 µg/kg/12h subcutaneous). On D21 rats were sacrificed. Heart ventricles and lungs were isolated, weighted and frozen. Histology of lungs confirmed interstitial lung fibrosis in all BLM-treated rats.

The real time-PCR levels of ACE-1 & ACE-2 were lower in lungs of BLM-IPF than in controls (40% and 48% reduction, respectively). Right ventricle weight was markedly increased in BLM-IPF rats (+66%). The treatment with LIR at the beginning of the inflammatory phase completely restored the levels ACEs at the fibrotic phase (21D), and prevented the right ventricle hypertrophy.

In conclusion BLM instillation causes local injury with inflammation and alteration of lung vasculature with pulmonary hypertension reflected by right ventricle hypertrophy and related to a reduction in the expression levels of ACEs

in the lung, especially ACE2. The precocious LIR treatment in the inflammatory phase prevented all these pathogenic alterations.

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**GP53****Clinical, laboratory and cardiac parameters in overt primary hypothyroidism versus overt central hypothyroidism**

Melania Balas<sup>1</sup>, Florina Parv<sup>2</sup>, Mihaela Vlad<sup>1</sup>, Ioana Golu<sup>1</sup>, Daniela Amzar<sup>1</sup> & Ioana Zosin<sup>1</sup>

<sup>1</sup>Department of Endocrinology, Victor Babes University of Medicine and Pharmacy, Timisoara, Romania; <sup>2</sup>Department of Cardiology, Victor Babes University of Medicine and Pharmacy, Timisoara, Romania.

**Background**

Hypothyroidism affects cardiac function, leading to cardiomyopathy, pericarditis, lower left ventricular performance, etc. The present study investigates different parameters (clinical, hormonal, biochemical, echocardiographic) in overt primary hypothyroidism (OPHypo) and overt central hypothyroidism (OCHypo).

**Material and methods**

The study included 33 untreated patients with OCHypo (5 with empty sella, 3 with idiopathic hypopituitarism, 7 with Sheehan's syndrome, 18 with different types of pituitary macroadenomas, before or after surgery) and 67 cases with OPHypo, respectively with chronic autoimmune thyroiditis. Among the patients with OCHypo, 4 presented partial pituitary insufficiency (2 cases on gonadotropins and TSH secretion and 2 cases on growth hormone and TSH secretion), the rest of the cases showing global pituitary insufficiency. Patients with acromegaly and Cushing's disease were excluded.

**Results**

The clinical picture was more severe in OPHypo as in OCHypo (dominated by fatigue, edema, dry skin, neurological alterations). The values of serum thyroxin were significantly lower in OPHypo ( $P < 0.0001$ ). 40% of OPHypo patients presented pericarditis, as compared to OCHypo (2 cases,  $P = 0.0003$ ). No statistical differences were noted between the two groups, regarding heart rate, systolic and diastolic blood pressure values, isovolumic contraction time. Nonetheless, the isovolumic relaxation time was significantly higher in OPHypo group ( $91.8 \pm 8.5$  ms), as in OCHypo ( $80.2 \pm 9.9$  ms,  $P < 0.0001$ ). Coronary artery disease was more common in OPHypo group (21 cases, 31.3%), as compared to OCHypo (5 cases, 15.1%,  $P = 0.095$ ). Hyponatremia was recorded in 4 patients with OPHypo and in 3 cases with OCHypo ( $P = 0.68$ ). The values of serum total cholesterol, LDL-cholesterol, glycemia, creatin-kinase, transaminases, creatinine were significantly higher in OPHypo group, correlated to lower values of serum thyroxin. The incidence of anemia was similar in both groups (18 cases in OPHypo group, 6 cases in OCHypo group,  $P = 0.456$ ).

**Conclusion**

The metabolic and cardiac parameters were more profound altered in primary hypothyroidism, as compared to central hypothyroidism.

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**GP54****Correlation between triglyceride glucose index (TyG) and coronary artery calcification in Korean adults**

Jihong You, Kahui Park, Jung Hye Kim, Sang Bae Lee, Yusik Kim, Ji sun Nam, Jong Suk Park & Chul Woo Ahn  
Gangnam Severance Hospital, Seoul, Republic of Korea.

**Objective**

Triglyceride glucose (TyG) index is considered a surrogate marker of insulin resistance, and insulin resistance is known risk factor of cardiovascular disease. Until now, few studies have investigated the relationship between TyG index and coronary artery calcification (CAC), thus we investigated the correlation between TyG index and CAC in healthy Korean Adults.

**Methods**

A total of 4,463 participants underwent cardiac computed tomography in health promotion center were enrolled. TyG index was calculated as  $\ln[\text{fasting triglycerides(mg/dl)} \times \text{fasting glucose(mg/dl)}/2]$ . Multi-detector CT was used to measure coronary artery calcium score (CACS) and  $\text{CACS} > 0$  was defined as the presence of CAC.

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