

upper to mid trachea and of the upper esophagus. The smallest diameter of the trachea was 6 millimeters. Ultrasound revealed an enlarged heterogeneous thyroid with a solid lesion in the left side inferiorly. Due to administration of IV contrast for the CTA, iodine uptake scan was not performed. Patient was determined to be of high surgical risk due to her comorbidities and she did not consent for thyroidectomy. She was treated with methimazole 20mg daily and IV hydrocortisone 50mg TID. Due to the administration of IV contrast she was not candidate for RIA either. Short term beam radiation was started. For the acute relief of respiratory distress the lesion was transversed through flexible bronchoscopy and a 16 mm by 80 mm covered ultraflex tracheobronchial stent was placed in the trachea. The post-stent lumen size was 80% of normal. Patient's respiratory status improved and the treatments with external beam radiation were continued. **Conclusion:** The treatment of choice for substernal goiter that causes airway obstruction is surgery. RIA can be an alternative when surgery is contraindicated. Since surgery as well as RIA was not an option for this patient we attempted external beam radiation to reduce the size of goiter. Because this treatment takes several weeks to be effective, temporary airway opening via an airway stent is the option for acute relief of symptoms.

Adrenal

ADRENAL - HYPERTENSION

Genetic Analysis and Clinical Characteristics of Hereditary Paraganglioma and Pheochromocytoma Syndrome in Korean Population.

Heewon Choi, Medical school student¹, Namki Hong, MD², Saeam Shin, MD³, Seung Tae Lee, MD³, Jong Rak Choi, MD³, Sang Wook Kang, MD⁴, Yumie Rhee, MD,PHD².

¹Yonsei University College of Medicine, Seoul, Korea, Republic of, ²Department of Internal Medicine, Severance Hospital, Endocrine Research Institute, Yonsei University College of Medicine, Seoul, Korea, Republic of, ³Department of Laboratory Medicine, Yonsei University College of Medicine, Seoul, Korea, Republic of, ⁴Department of Surgery, Yonsei University College of Medicine, Seoul, Korea, Republic of.

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Pheochromocytoma (PCC) and paragangliomas (PGL), rare neuroendocrine tumor originating from the chromaffin cells together referred as PPGL, are acknowledged to be more than 40% hereditary, related to germline mutations of susceptibility gene. With the advancement of genetic analysis technique, including next-generation sequencing (NGS), there has been attempts to classify PPGL into molecular clusters - Pseudohypoxic, Wnt signaling, and Kinase signaling PPGL. With NGS being applied to clinical setting only recently in Korea, we aimed to review the result of genetic analysis, including NGS, and investigate its association with clinical characteristics in Korean PPGL patients. We reviewed medical records of patients with PPGL in Severance hospital enrolled between January of 2006 to October of 2019. We gathered clinical phenotype by reviewing medical records of the patients who underwent targeted NGS

from March of 2017 to October of 2019 using Severance hospital's endocrine panel or who had known germline mutations of related genes. Family gene analysis was recommended for family members of patients with significant gene mutations. Among 78 patients with PPGL, 58 patients underwent targeted NGS results or had prediagnosed mutations. Thirty-three patients (62.1%) had clinically significant germline mutation. In patients with hereditary PPGL, there were higher likelihood of family history and presence of other tumors. There were significant differences in the type of PPGLs, percentage of family history, metastasis rate and the presence of other tumors among 3 molecular clusters - pseudohypoxic TCA cycle-related, pseudohypoxic VHL/EPAS1-related and kinase-signaling group. Twenty-seven different germline mutations from 11 genes (SDHB, RET, VHL, EPAS1, NF1, KIF1B, MAX, SDHA, SDHC, SDHD, and TMEM127) were found, SDHB mutation being the most common. Four of them were novel mutations; EPAS1 c.1250G>A (p.Gly417Glu), NF1 c.6215delA (p.His2072LeufsTer10), NF1 c.6777del (p.Gly2260fs), and SDHC exon 2-6 duplication. In conclusion, we report the prevalence of germline mutations in Korean PPGL patients, and the rate of hereditary PPGL is estimated to be as high as 62.1%. NGS is a good and accessible tool for genetic analysis in patients with PPGLs, and further research on molecular classification will lead to precision medicine.

Diabetes Mellitus and Glucose Metabolism

DIABETES TECHNOLOGY AND ADVANCES IN CLINICAL TRIALS

Autonomous Drone Delivery of Insulin

Derek Timothy O'Keefe, MB BCh BAO PhD¹, Kevin Johnson, PhD², Spyridoula Maraka, MD, MS³.

¹University Hospital Galway, Galway, Ireland, ²University of Limerick, Ireland, Limerick, Ireland, ³University of Arkansas for Medical Sciences, Little Rock, AR, USA.

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Abstract: Unmanned aerial vehicles (UAV's) or drones have become ubiquitous in modern society, predominantly as recreational tools (e.g. racing, photography). However, their use to transport medical products is still nascent, with the best examples seen in emerging economies with underdeveloped infrastructure due to local terrain such as East African jungles or the South Pacific islands. A case in point is the drone operator Zipline, which has pioneered the delivery of blood products in Rwanda since 2016 [1]. Therefore UAV's have potential in disaster relief operations where there is often significant disruption of health systems [2]. After Ireland experienced Storm Ophelia (Cat 3 Hurricane) in 2017 and then Storm Emma (Winter Blizzard) in 2018, many of our patients with Diabetes had issues with insulin supplies as they remained housebound due to subsequent flooding/snowdrifts. Diabetes Mellitus is one of the world's most common chronic diseases with approximately 400 million people affected. Insulin is often needed to achieve and maintain glycemic control and therefore is considered a lifesaving medication for patients