MON-530
Introduction: Somatic mutations of RAS- and BRAFV600E- are the most common driver mutation in thyroid cancer (TC) and in the majority of cases, these are mutually exclusive. Clinical characteristics of TC with either RAS or BRAFV600E mutation is not systemically studied.
Methods: This is a retrospective study at the Ohio State University (OSU) from 1/2000 to 12/2018. Data were extracted from OSU Endocrine Neoplasia Repository (ENR). Medullary thyroid cancer was excluded. The treating physician determined patient management. Statistical analysis was performed with the chi-square test for categorical values and Mann-Whitney U test for continuous unpaired values. Two-sided P values of less than 0.05 were considered statistically significant.
Results: Out of 320 patients, 152 patients had a positive mutational profile. Of these, 128 patients had a BRAFV600E mutation and 14 had a RAS mutation. Details of RAS mutation were as follows; NRASQ61K (n=2), NRASQ61R (n=1), HRASQ61R (n=1), HRASQ61K (n=1), NRAS without further details (n=9). Local lymph node metastasis was significantly less in RAS mutated cancer (58% vs 16%, p<0.05). Lymph node metastasis was limited to N1a in all RAS group, whereas 38% of BRAFV600E had N1b status. The number of positive lymph nodes were significantly fewer in the RAS group (mean 0.42 vs. 9.1, p=0.003). None of the patients in RAS group developed subsequent local neck recurrence, whereas 19% of BRAFV600E group developed a recurrence (p=0.05). Bone metastasis was more common in RAS compared to BRAFV600E group (21% vs 6%, p=0.04) but there were no differences in other distant metastases. Presence of extrathyroidal extension was significantly higher in BRAFV600E compared to RAS group (58 % vs 8%; p=0.04). Classic variant papillary thyroid cancer was the most common histologic diagnosis with both mutations, however, follicular-variant papillary thyroid cancer was more common in RAS than BRAFV600E group (29% vs 8%, p=0.04) and follicular thyroid cancer was only seen in the RAS group (25% vs 0%, p<0.05). There was no difference in gender, age at diagnosis, disease status after initial therapy, RAI treatment, RAI dosage, and mortality between the groups.
Conclusion: Thyroid cancer associated with a RAS-mutation has less tendency to metastasize locally and has a higher incidence of bone metastasis compared to thyroid cancer with BRAFV600E-mutation. Individualized clinical follow up may be indicated depends on their mutational profile.
References:
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MON-624
Introduction: Physical activity plays an important role in glycemic control in patients with type 2 diabetes, but overall adherence rate is low. For patients not able or willing to engage in regular physical exercise, whole body vibration comes as a potential alternative. Objective: To evaluate the effect of 28Hz whole body mechanical vibration on glycemic control and other metabolic parameters in patients with type 2 diabetes. Methods: 24 adults with type 2 diabetes on oral antidiabetic agents, with a baseline HbA1c between 6.5 and 9.0%, were randomized into two groups. The control group (CG) was advised to adopt lifestyle modifications, and the intervention group (IG) received the same orientations and used a 28 Hz whole body vibrating platform daily for 20-30 minutes during 12 weeks. Results: Data from 22 patients were analyzed (one from each group was excluded). Baseline characteristics of both groups were similar except for triglycerides, which were higher in the CG (111.8±39.9 mg/dL vs. 188.9±68.8 mg/dL, p<0.05). After 12 weeks, there was a significant reduction in glycated hemoglobin in the IG (7.69±0.49 vs. 7.17±0.77%, p<0.05), not observed in the CG (8.05±0.98 vs. 7.92±1.07%, p=0.52). A non-significant trend for weight loss in IG was observed (78.14±10.47 vs. 77.14±11.08 Kg, p=0.069). There were no significant differences between the groups regarding fasting blood glucose or any other clinical and biochemical variables analyzed. Conclusion: This study suggests an improvement in glycated hemoglobin at 12 weeks with the use of the 28Hz vibration platform in patients with type 2 diabetes. However, further studies with a larger number of patients and longer follow-up are needed to better define the role of whole body vibration as an adjunct in glycemic control.

Thyroid
THYROID HORMONE ACTION AND SIGNALING Kruppel-Like Factors 9 and 13 Cooperate to Maintain Mammalian Neuronal Differentiation Jose Avila-Mendoza, PhD, Arasakumar Subramani, MS, Robert J. Denver, PhD.
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OR01-04 During development of the central nervous system, neural cells respond to several external cues that influence cell proliferation, differentiation, axonal growth and synaptogenesis. Thyroid hormone plays a critical role in each of these processes. Previously, we showed that Krüppel-like factor 9 (KLF9), a zinc finger transcription factor, is strongly and directly induced by liganded thyroid hormone receptors, and it mediates the actions of thyroid hormone on neuronal differentiation during late fetal development. Here we analyzed the molecular mechanisms by which KLF9 maintains neuronal structure, and inhibits regeneration in juvenile and adult neuronal cells. We also investigated the actions of the closely related transcription factor KLF13, which is paralogous to KLF9. We engineered the adult mouse hippocampus-derived cell line HT22 to control Klf9 or Klf13 expression by addition of doxycycline.
We also used CRISPR/Cas9 genome editing to generate Klf9 or Klf13 knock out (KO), and Klf9+Klf13 double KO HT22 cell lines. To induce neurite outgrowth, we treated cells with forskolin (FK)+IBMX, which increases intracellular cAMP; elevated cAMP is a hallmark of regenerative responses of neurons to injury. Our results show that FK+IBMX increased neurite length in the parent HT22 cell line, and this action was enhanced in Klf9 and Klf13 single KO cells, and was even greater in double KO cells. By contrast, the stimulatory effect of FK+IBMX on neurite outgrowth was blocked by simultaneous forced expression of Klf9 or Klf13 in parent HT22 cells. This effect on neurite outgrowth was confirmed in primary mouse hippocampal neurons, where electroporation of expression plasmids for Klf9 or Klf13 suppressed FK+IBMX-induced neurite extension compared with empty vector-transfected cells. Analysis of RNA-seq data obtained from HT22 cells following 8 hr of induced Klf9 or Klf13 expression showed that both proteins impact the cAMP signaling pathway. Using transfection-reporter assays and chromatin immunoprecipitation, we confirmed that several genes in this pathway are direct targets of both KLFs. Our findings suggest that KLF9 and KLF13 may cooperate to maintain the differentiated state of mammalian neurons and thereby block regeneration, in part, by repressing the cAMP signaling pathway.

Cardiovascular Endocrinology
HYPERTRIGLYCERIDEMIA; INFLAMMATION AND MUSCLE METABOLISM IN OBESITY AND WEIGHT LOSS I Extremely Elevated Plasma Lipoprotein X Level Secondary to Alcoholic Cholestasis Carolyn Ann Nelson, MD, Zahid Ahmad, MD, Abhimanyu Garg, MD.
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SAT-572 Background Marked elevations of plasma lipoprotein X (Lp-X) levels have been reported in patients with cholestasis due to primary biliary cirrhosis, pancreatic cancer, hepatitis C, and quetiapine. We now report a patient with extreme elevation of plasma Lp-X due to alcohol-induced cholestasis.
Case Presentation A 44 year-old African American male presented with painless jaundice and fatigue for one week. He denied nausea, vomiting, diarrhea, change in stool or urine color, or weight loss. He consumes 720-1080 mL of beer (2-3 cans) every night and admitted to heavier alcohol consumption in the past. On physical examination he had scleral icterus and hepatomegaly but no xanthomas or xanthelasmas. His serum total cholesterol was 1,126 mg/dL (normal range, 120-199 mg/dL), triglycerides were 238 mg/dL (50-150 mg/dL), calculated LDL-cholesterol was 1,072 mg/dL (<100 mg/dL), and HDL-cholesterol was 6 mg/dL (>39 mg/dL). His serum AST, 162 IU/L (10-50 IU/L); ALT, 79 IU/L (10-50 IU/L); alkaline phosphatase, 1,058 IU/L (40-129 IU/L); total bilirubin, 18.8 mg/dL (0.2-1.3 mg/dL); direct bilirubin, 13.5 mg/dL (0-0.3 mg/dL); and gamma glutamyl transferase, 4,583 IU/L (8-61 IU/L) were markedly elevated. His blood alcohol