subjects, overt hypothyroidism (OH) in 33%, congenital hypothyroidism (CH) in 18% and overt thyrotoxicosis in 5%. Autoimmune thyroiditis constituted the major cause of hypothyroidism in the OH group with significantly higher prevalence of anti-TPO and antiTG antibody in comparison of SCH group (61% vs 31%; 45% vs 21.9%, p<0.05) respectively. All subjects in OH group were treated whereas 76% subjects in SCH group were treated and the mean dose of L thyroxine required to treat OH was significantly higher (2.31+1.1ug/kg/day vs 1.76+1.07ug/kg/day; p<0.001) in comparison of SCH group. A major independent predictor of treatment in SCH was initial TSH which was significantly higher in the treated group (11.65 + 3.80 uIU/ml vs 9.24 + 1.31 uIU/ml; p<0.001). Subjects with congenital hypothyroid presented at a mean age of 6 months (18 days to 2 years) with most common aetiology being thyroid hypoplasia and dyshormonogenesis
(20% each). Graves' disease was diagnosed in 11 out of 12 subjects with thyrotoxicosis and were treated with antithyroid drugs. Overall 85.5% of refereed subjects were treated and after one-year follow up management was found to be adequate in 81% subjects. **Conclusions** The evolving trend of diagnosing children having nonspecific symptoms with SCH is a matter of concern as many are subjected to the burden of unwanted prolonged treatment and frequent testing as highlighted in our study. Delayed presentation of CH in our study warrants active surveillance of children at birth for thyroid disorders to avoid long term adverse effects on mental development.

Neuroendocrinology and Pituitary

ADVANCES IN NEUROENDOCRINOLOGY

Female Mice Lacking Brain Insulin Production Exhibit Learning Deficits, Anxiety, and Reduced Hippocampal Cyclin D1 Expression

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Insulin dysregulation independently underlies diabetes and Alzheimer's Disease (AD) pathology. However, the former has also been shown to be a risk factor for the latter. The ancestral insulin gene (*Ins2*), but not the pancreas-specific *Ins1*gene, is transcribed locally within the brain in mice. We confirmed that neuronal expression of *Ins2* is most prominent within the hippocampus, a brain region with established roles in learning and memory, and that it was reduced by a diet known to promote neuronal dysfunction. It is not yet clear, however, how insulin produced locally within the brain influences hippocampal function, learning and memory. To eliminate brain-derived insulin, we used young and old mice with germline *Ins2*knockout ($Ins2^{-/-}$) and their normal complement of wildtype *Ins1* alleles, which had equivalent pancreatic insulin and normal glucose homeostasis. Using the Morris water maze, we found that learning and memory performance of female $Ins2^{-/-}$mice was significantly impaired relative to wild-type mice, whereas the performance of male $Ins2^{-/-}$and wild-type mice did not differ. During acquisition training, the swim-speed in female $Ins2^{-/-}$was faster than wild-type mice, suggesting increased stress reactivity and motivation to escape from water. Indeed, anxiety-like behavior was increased in female mice as assessed by the open-field test. Using RNA sequencing to profile isolated hippocampi, we found that female$Ins2^{-/-}$mice had a significant reduction in Cyclin D1 (*Ccnd1*) compared with littermate controls. This observation points to a possible defect in hippocampal neurogenesis, a physiological hallmark of impaired memory and emotionality implicated in both, diabetes and AD. Together these data suggest that *Ins2*plays sex- and brain region-specific roles in neuronal function and perhaps adult neurogenesis.

Adrenal

ADRENAL CASE REPORTS I

When Acne, Hirsutism and Menstrual Irregularities Are More Than PCOS

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Background: Polycystic ovarian syndrome (PCOS) mimics non-classic congenital hyperplasia (NCCAH), presenting with hyperandrogenic symptoms. NCCAH is usually diagnosed later in life, where 21-hydroxylase (21OHD) is the most common deficiency. There are more than 300 mutations in 21OHD, being V281L one of the described mutations.

Clinical Case: 23 y/o female patient G0P0 comes to the office complaining of irregular periods, frontal hair loss, weight gain, acne and hirsutism. She has had noticed these changes since menarche; however, her acne was getting worse. Was seen 2 months prior to presentation by her gynecologist who order a free Testosterone that was elevated (6.4 pg/mL, n<4.2 pg/mL), with normal TSH (1.1 uIU/mL, n,0.45-4.5). She was not taking any medication. Her mother has history of 2 spontaneous abortions and her sister has acne and hirsutism as well. On physical exam BMI was 26, it was noticed comedones and papules on her face, back and shoulders. Ferriman-Gallwey scale was >8. At the initial visit due to the clinical scenario, it was thought that she had hyperandrogenic syndrome, probably secondary to PCOS. Serum blood test were ordered and showed an elevated total testosterone (71 ng/dL, n,8-48ng/dL), free testosterone (8.4 pg/mL, n<4.2 pg/mL), 17- OH pregnenolone performed by liquid chromatography-tendem mass spectrometry (LC-MS/MS) was (429 ng/dL, n, 35-290 ng/dL luteal phase) and androstenedione LC-MS/MS (1941 ng/dL, n, 41-262 ng/dL) which confirmed NCCAH diagnosis due to 21OHD. She had no desire to become pregnant at the time of evaluation; however, was concern about fertility and genetics. Was started on OCPs and genetic testing was positive for V281L mutation in the CYP21A2 gene, being homozygous for this