

of scoliosis, seizures, familial psychosocial health, sleep and behavioral changes with each medication. Annual assessments include: fasting lipids, thyroid panel, screening urinalysis. Patients should receive standard treatment for comorbid endocrine conditions, classically: hypercholesterolemia, hypothyroidism, growth hormone deficiency.

Clinical Case: 49-year-old Hispanic female with history of SMS who presented to endocrinology for type 2 diabetes mellitus (T2DM) management. Past medical history includes T2DM with peripheral neuropathy, hypertension, hypercholesterolemia, intellectual disability, anxiety, recurrent genitourinary infections, sleep apnea. Physical exam is remarkable for macroglossia, truncal obesity, scoliosis, extremity excoriations evident of skin picking and xerosis, syndactyly of 2nd-3rd toes. Patient exhibited maladaptive behaviors like page-flipping, self-hugging, tantrums. Over the past 3 years, BMI remained in the obese range ($>30 \text{ kg/m}^2$) and A1c fluctuated from 7.0 to 10.6% averaging 8.8% ($<5.7\%$). Patient is currently managed on insulin glargine, pioglitazone and liraglutide. She did not tolerate metformin due to dose-dependent diarrhea. Patient's mother chose against SGLT2 inhibitors due to diminished genitourinary hygiene. T2DM management was complicated by patient behaviors, including nocturnal consumption of fructose-containing food and beverages, exercise intolerance, and associated caregiver fatigue.

Conclusion: This case describes a patient managed for metabolic dysfunction in conjunction with a rare microdeletion disorder causing neurobehavioral disturbance with disrupted circadian sleep-wake patterns. The most difficult aspects of diabetes management included difficulty implementing lifestyle modifications to control the patient's hyperglycemia.

Steroid Hormones and Receptors

STEROID BIOLOGY AND ACTION

Improving the Diagnosis, Treatment, and Prevention of Endocrine Diseases Through Accurate and Reliable Laboratory Measurements with CDC's Clinical Standardization Programs

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Laboratory measurements are critical for the correct diagnosis and treatment of patients as well as in the investigation of chronic diseases such as hypogonadism, PCOS, and bone-and kidney-related diseases. Inaccurate measurements can lead to misclassification of patients and incorrect treatment. Furthermore, the effective use of research findings in patient care is prevented. The CDC Clinical Standardization Programs (CDC CSP) assess the analytical performance of assays against performance goals defined by clinical and medical organizations. The CDC CSP assist with assay calibration, the certification

of analytical performance, and the monitoring of analytical performance during the measurement of patient and/or study samples. CDC CSP have programs in place for the calibration and certification of commercial assays and laboratory developed tests (LDTs) for total testosterone (TT), estradiol (E2), vitamin D (VD), free thyroxine (FT4), total cholesterol (TC), total glycerides (TG), HDL-cholesterol (HDL-C), and LDL-cholesterol (LDL-C). The programs available for monitoring analytical performance during routine testing include TT, VD, TC, TG, HDL-C, apolipoprotein AI and B. CDC CSP also support accuracy-based external quality assurance surveys such as those offered by the College of American Pathologists. Enrollment of assays and LDTs in CDC's certification programs has resulted in improvements in calibration accuracy; i.e. the absolute mean bias of assays participating in the CDC Vitamin D Standardization Certification Program was well below the allowable bias of 5% each year. Assays standardized in CDC's certification programs also demonstrated higher accuracy in routine patient testing; i.e. CDC VD certified assays have a lower bias compared to non-certified assays. Similar observations were made with assays certified in the CDC's program for TT. Monitoring data over the past 10 years from the CDC Lipid Standardization Program indicated that the majority of TC measurements performed in routine testing were consistently within the recommended bias limits of $\pm 3\%$. CDC CSP continue to improve the analytical performance of assays by addressing measurement bias caused by factors other than incorrect calibration such as interfering compounds. The programs are responding to new clinical and public health needs with the addition of new analytes such as PTH and glucose. The CDC CSP support projects aiming at establishing reference intervals and other research studies. The CDC CSP work with stakeholders, such as the Partnership for the Accurate Testing of Hormones and the Endocrine Society, to educate the clinical and laboratory communities about the importance of using standardized assays in patient care, research, and public health. References: Partnership for Accurate Hormone Testing (PATH). www.hormoneassays.org. College of American Pathologists (CAP). www.cap.org.

Neuroendocrinology and Pituitary

ADVANCES IN NEUROENDOCRINOLOGY

Dual Role of Carboxypeptidase E in Prohormone Processing and a Novel Neurotrophic Factor Mediating Neuroprotection and Cognitive Functions in Hippocampal CA3 Neurons in Mice

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Stress causes release of glucocorticoids from the adrenals which then circulate to the brain. High concentrations glucocorticoid from chronic severe stress results in pathophysiology in the brain, including neuronal degeneration, cell death and cognitive dysfunction, leading to diseases such as Alzheimer Disease and Major Depressive