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Case of Cushing’s Disease That Presented as Diabetic Ketoacidosis and Successfully Treated With Stereotactic Radiosurgery During the COVID-19 Pandemic

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Background: Although Cushing’s disease is known to impair glucose metabolism, diabetic ketoacidosis (DKA) as its initial presentation has been reported in only a few case reports. The first-line treatment for Cushing’s disease is transsphenoidal surgery, but safety concerns during the COVID-19 pandemic has led to the utilization of other treatment options. We present a case of Cushing’s disease that presented initially as DKA and was successfully treated with stereotactic radiosurgery. Case Presentation: Our patient was a 36-year-old female known to have diabetes mellitus and hypertriglyceridemia for one year. She presented with one-week history of generalized weakness, blurring of vision, and elevated blood pressure. Her blood glucose level was high at 523 mg/dL, associated with ketosis and metabolic acidosis. She was diagnosed with diabetic ketoacidosis which resolved after hydration and intravenous insulin administration. Further history revealed that she has been experiencing progressive weight gain and infertility for the past five years. She had cushingoid features including obesity, scalp hair thinning, moon facies, acne, hirsutism, and buffalo hump. Midnight salivary cortisol was high at 9.34 ng/mL (0.20-4.00 ng/mL). Low dose dexamethasone suppression test showed an unsuppressed serum cortisol level at 31.2 mcg/dL (<1.8 mcg/dL). Adrenocorticotropic hormone (ACTH) level was high at 88.5 pg/mL (<46 pg/mL) and pituitary magnetic resonance imaging (MRI) showed an enlarged pituitary gland measuring 13.4 mm in the craniocaudal dimension with leftward displacement of the pituitary stalk. She was diagnosed with Cushing’s disease and was initially advised transsphenoidal surgery. Due to concerns of COVID-19 transmission, the team and the patient decided to do stereotactic radiosurgery (SRS). The procedure was performed without complication. At 2 months follow-up, there was noted improvement of blurring of vision, normalization of cortisol level to 20.72 mcg/dL (4.30-22.40 mcg/dL), and a decreased ACTH level at 62.19 pg/mL. There was a 4 mm decrease in the craniocaudal dimension of the pituitary gland on repeat pituitary MRI. Thyroid stimulating hormone (TSH) level normalized from 0.209 to 0.647 UIU/mL (0.55-4.78 UIU/mL), and the glycohemoglobin decreased from 11.5% to 6.3%. Hypertension was controlled on one medication. Conclusion: Stereotactic radiosurgery is usually reserved as a secondary option to transsphenoidal surgery. On average, normalization of cortisol levels after SRS takes 14 months. In our patient, the serum cortisol decreased to within normal levels at only 2 months after SRS. While a longer follow-up is desirable in order to assess the durability of control of hypercortisolemia, our case demonstrates that stereotactic radiosurgery is a safe and effective treatment option for Cushing’s disease during the COVID-19 pandemic, when safety protocols and decreased hospital and patient resources might hinder the performance of transsphenoidal surgery.

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