Insulinomas are rare pancreatic neuroendocrine tumors with an incidence of 4 cases per million per year and present...
with hypoglycemic symptoms due to uncontrolled and excessive insulin secretion by the tumor. Although most commonly benign and treated with surgery, 5-10% are malignant, inoperable and are managed medically with somatostatin analogs, chemotherapy, mTOR inhibitors and diazoxide. A 28 year old male with a history of metastatic insulinoma with progressive disease and refractory hypoglycemia presented with lethargy, diaphoresis, and blood glucose (BG) level of 32mg/dL [65-99]. He was previously admitted for severe hypoglycemia and was treated with FOLFOX, LUTATHERA, Octreotide, TPN, steroids and diazoxide. Sugars were monitored via continuous glucose monitor (CGM) and insulin and C-peptide levels were closely monitored outpatient. Treatment was effective and medications were tapered off so that he no longer needed a CGM and was only on FOLFOX and octreotide prior to presentation. On admission, insulin level was 172 uIU/mL [<17], peaking at 312 uIU/mL and BG dropping to 22mg/dL. He was placed on a dextrose 10% infusion, TPN, diazoxide suspension, and CGM. This admission, however, his insulin levels were much higher requiring higher doses of diazoxide, but he was unable to tolerate the diazoxide solution due to extreme nausea and projectile vomiting, resigning him to a long-term stay in the ICU. Due to a lack of availability of other oral formulations in the US, compounding pharmacies were contacted and pharmaceutical grade diazoxide powder was compounded into 100mg capsules by an outside pharmacy. Dose was adjusted while monitoring BG and insulin levels. Prior to discharge, insulin level was 77.7 uIU/mL and BG levels had normalized. He was sent home on diazoxide 200mg twice a day, TPN, and CGM. FOLFOX was resumed. Outpatient follow up revealed euglycemia and suppressed insulin level of 12.3 uIU/mL [<17], allowing for further tapering of diazoxide dose and discontinuation of TPN. Diazoxide is known to be a safe and effective treatment for hypoglycemia in humans and ferrets alike. It inhibits insulin secretion in pancreatic B cells and increases hepatic glucose production. Side effects of nausea and vomiting can be a barrier to compliance, as seen in our patient. Currently, only oral solutions of diazoxide have been approved for human consumption whereas ferrets, commonly afflicted with insulinomas, are treated with oral pills. Changing the oral formulation to pill form allowed for better compliance, easy dose adjustments using insulin as a marker for response, and symptom resolution due to adequate suppression of insulin levels. Most importantly, it allowed for our patient to transfer out of the ICU and be discharged home with improved quality of life, a feat that was impossible without this change in formulation.

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