INTRODUCTION

- Well-differentiated NETs are relatively rare tumors.
- Carcinoid tumors have the ability to secrete various peptides and bioamines that lead to carcinoid syndrome manifested as cutaneous flushing, diarrhea, bronchial constriction and cardiac involvement.
- The deficiencies of vitamins D and B₁₂ have previously been reported in patients with carcinoid tumors presumably due to chronic diarrhea associated with the carcinoid syndrome.
- This case demonstrates a less common adverse event related to a recurrence of carcinoid tumor.

LEARNING OBJECTIVES

- Understand the complications patients with carcinoid tumor are at risk for developing.
- Review treatment for patients with carcinoid tumor and Vitamin A deficiency.
- Recognize biomarkers that should be evaluated in patients with diagnosis of pancreatic NET.

CASE PRESENTATION

- 66yrs male with a history of neuroendocrine tumor carcinoid of the small bowel, node positive that was resected in 2001 presenting with anemia, flushing, and hypertension.
- He had several months of severe diarrhea with electrolyte abnormalities of hypomagnesemia and hypokalemia.
- His diarrhea was occurring daily with between 10-15 watery bowel movements.
- Ultrasound performed which showed moderate ascites as well as liver cirrhosis and a solid liver mass measuring 4.7 cm.
- 24-hour collection 5 HIAA tested given his history of carcinoid syndrome which was markedly elevated at 97.2mg/24hr with the upper limit of normal at 10.1mg/24hr.
- Biopsy showed metastatic, well-differentiated neuroendocrine tumor, grade 2, compatible with spread from known intestinal primary with Ki-67 proliferative index of 5%.
- Patient’s biggest complaint in addition to severe diarrhea was he recently noticed he was only seeing things in varying shades of green, black, and white.
- On lab testing, he was found to have an undetectable Vitamin A level of <5mcg/dL (normal 32.5 - 78.0 mcg/dL).
- He was started on high dose Vitamin A replacement at 100,000IU, followed by 10,000IU daily, which is a standard maintenance dose for Vitamin A replacement after high dose replacement.
- He reports his color vision improved within days of Vitamin A therapy, now back to baseline, which correlates with significant improvement in his Vitamin A levels.
- He was started on Sandostatin 50mcg three times per day as well as Imodium which better controlled disease related diarrhea.

DISCUSSION

- Neuroendocrine tumors can present in a variety of ways with unique constellation of symptoms and should be considered in patients that have uncontrolled diarrhea.
- Laboratory workup often includes measuring serum chromogranin-A and 24-hour urine 5-hydroxyindoleacetic acid levels.
- In pancreatic NETs, additional functional markers such as glucagon, gastrin, vasoactive intestinal peptide, or insulin levels should be evaluated depending on the clinical presentation.
- Malabsorption should also be considered and evaluated in these patients given the possibility for severe vitamin deficiencies.
- Vitamin A deficiency also causes night blindness (nyctalopia) and retinopathy because vitamin A is a substrate for the photosensitive visual pigments in the retina.
- Sandostatin mimics natural somatostatin by inhibiting serotonin release and the secretion of gastrin, VIP, insulin, glucagon, secretin, motilin, and pancreatic polypeptide and is used in the treatment of patients with carcinoid tumors.

REFERENCES