Weight gain after acid control in Zollinger-Ellison syndrome

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Background

- Zollinger-Ellison syndrome (ZES) is characterized by neuroendocrine tumor, hypergastrinemia and gastric acid hypersecretion and may be sporadic or part of multiple endocrine neoplasia type 1 (MEN-1).
- Gastric acid hypersecretion by a gastrinoma leads to peptic ulcer disease, diarrhea and weight loss.
- Control of gastric acid hypersecretion with proton pump inhibitors (PPI) is a critical component of ZES treatment and may be combined with curative surgical resection of the gastrinoma if disease is localized.
- It is not known how acid suppression with PPI or curative surgical resection would affect weight over time in ZES patients.

We hypothesized that patients with ZES who had gastric acid secretion adequately controlled by PPI or via curative surgical resection would demonstrate an increase in weight that would be durable over time.

Aims

- To determine how gastric acid secretion controlled by medical therapy with appropriate dose PPI affects weight over time in ZES patients.
- To determine how gastric acid secretion controlled by curative surgical resection affects weight over time in ZES patients.

Materials & Methods

- Retrospective cohort study of ZES patients (n=60) followed at a tertiary care medical center over a 20 year period (1994-2014).
- Weight change was measured versus a baseline pre-acid suppression weight and change was analyzed as absolute and percent change from baseline at 6, 12, 18 and 24 months after acid was controlled by PPI or curative surgery.
- Patients were excluded if pre-acid suppression weights were unavailable, if surgery was not for curative intent or if they developed decompensated organ failure unrelated to ZES.

Results

- Study flow diagram
- Study patient demographics
- Weight gain after acid control in Zollinger-Ellison syndrome
- Surgical treatment acid control: weight change from baseline
- Medical therapy (PPI) acid control: absolute change in weight
- Medical therapy (PPI) acid control: weight change from baseline

Limitations

- Potentially relevant clinical features were not adjusted for in our analysis, including smoking status, comorbidities or medication usage.
- Small cohort size may not be powered to detect significant differences where they might exist (Type II error).

Conclusions

- ZES patients on appropriate dose PPI gained a statistically significant amount of weight versus a pre-acid controlled baseline when measured at 6 month intervals over two years.
- These patients gained an average of 15.1 pounds after two years on therapy.
- ZES patients who had surgery for curative intent gained a statistically significant amount of weight versus a pre-surgical weight baseline.
- There was a lag effect over the first 6 months post-operatively that was followed by weight gain at 12 and 18 months after surgery.
- At 24 months post-surgery the weight gain effect was no longer significant but there was a trend toward increasing weight in those patients who were cured of their disease.
- These data represent a novel description of weight gain after acid suppression in ZES and demonstrate weight loss seen in this disease can be reversed with both medical and curative surgical therapy.
- These findings suggest trending weight over time might be a clinically useful surrogate marker for disease control in ZES.

References