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Semaglutide Induced Pancreatitis: A Case Report

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ABSTRACT

Semaglutide, a glucagon-like peptide-1 receptor agonist (GLP-1 RA), is widely used for managing type 2 diabetes due to its efficacy in enhancing insulin secretion and facilitating weight loss. Despite its benefits, concerns have arisen regarding the potential risk of acute pancreatitis (AP) associated with GLP-1 RA use. Although the Semaglutide and Cardiovascular Outcomes in Patients with Type 2 Diabetes (SUSTAIN-6) trial did not show a significant increase in AP risk with semaglutide, some studies indicate a possible link between GLP-1 RAs and pancreatic inflammation. This case is about a patient with AP who was recently started on semaglutide. The increasing use of GLP-1 RAs necessitates awareness of their potential to cause pancreatic complications, underscoring the need for ongoing research and clinical vigilance to better understand and manage this risk.

Keywords: Semaglutide, Pancreatitis, Glucagon-like peptide-1 receptor agonist

INTRODUCTION

Diabetes is a chronic condition characterized by insufficient insulin production by the pancreas or the body's inability to effectively utilize the insulin it does produce. In India, approximately 77 million adults are affected by type 2 diabetes, with an additional 25 million individuals at an elevated risk of developing the condition[1]. Glucagon-like peptide-1 receptor agonists (GLP-1 RAs) are antidiabetic drugs that have effectively enhanced blood sugar control in adults with type 2 diabetes mellitus (T2DM), promoted weight loss, and lowered blood pressure[2]. Semaglutide, marketed as Ozempic and Wegovy, is a widely used GLP-1 receptor agonist administered via a weekly subcutaneous injection. Since its FDA approval in June 2021 for weight loss in individuals with a body mass index of 27 or higher who have weight-related health conditions, its prescription by healthcare providers has become increasingly common[3]. Although reports of pancreatitis linked to GLP-1 receptor agonists are relatively scarce, the growing use of these medications could potentially lead to a higher incidence of related side effects. We discuss a case involving severe pancreatitis in a patient undergoing treatment with semaglutide.

CASE REPORT

The patient, a 48-year-old male with a medical history of type 2 diabetes mellitus, hypertension, and obesity (BMI of 45.8), was on metformin 500 mg twice daily, lisinopril 10 mg daily, atorvastatin 10 mg daily, and semaglutide 0.5 mg weekly for the past three months. He presented to the emergency department with severe abdominal pain that began the previous day, localized to the right upper quadrant and radiating to his back. He had no history of alcohol or tobacco use, recreational drug use, or recent abdominal trauma.

Laboratory tests showed significantly elevated aspartate aminotransferase (AST) at 324 IU/L and alanine aminotransferase (ALT) at 140 IU/L, along with a markedly elevated lipase level of 4,986 U/L. Hepatitis serologies were negative, and his hemoglobin A1C was 5.9%. A CT scan of the abdomen and pelvis with contrast did not reveal any acute abnormalities. Acute pancreatitis was diagnosed based on his symptoms and elevated lipase levels, and semaglutide was discontinued due to its suspected role in the development of his condition. The patient improved and was able to resume a solid diet the following day, being discharged with instructions to avoid semaglutide. At his follow-up appointment three months later, he reported no recurrence of abdominal pain.

ABBREVIATIONS AND ACRONYMS

- SUSTAIN-6: Semaglutide and Cardiovascular Outcomes in Patients with Type 2 Diabetes
- GLP-1 RA : Glucagon-like peptide-1 receptor agonist
- AP: Acute Pancreatitis
- T2DM :Type 2 Diabetes Mellitus
- ALT: Alanine transaminase
- AST: Aspartate transaminase

DISCUSSION

Both oral and subcutaneous forms of semaglutide have been associated with gastrointestinal issues, including nausea, vomiting, and diarrhea. Additionally, there have been multiple reports connecting GLP-1 receptor agonists to the onset of acute pancreatitis[4][5]. However, the relationship between semaglutide use and the risk of acute pancreatitis remains a topic of debate[6]. The proposed mechanism is pancreatic duct gland hyperplasia and acinar cell hypertrophy leading to exocrine occlusion, which in turn, may lead to pancreatic inflammation and vascular injury[7][8]. As the use of GLP-1 receptor agonists for diabetes management and weight loss becomes more widespread, their global usage is anticipated to rise significantly. The SUSTAIN-6 trial, which investigated the cardiovascular outcomes of subcutaneous semaglutide in patients with type 2 diabetes, showed that the incidence of acute pancreatitis with semaglutide was comparable to that seen with placebo[9]. However, other studies have shown conflicting results[10][11]. Our patient, who began weekly semaglutide 0.5 mg three months earlier, did not have the usual risk factors for acute pancreatitis, such as recent alcohol use, abdominal trauma, steroid use, viral infections, or autoimmune conditions. Additionally, his laboratory tests showed no evidence of hypercalcemia, hypertriglyceridemia, or leukocytosis. Given the recent initiation of semaglutide, the absence of typical acute pancreatitis indicators, significantly elevated lipase levels, and negative imaging results, semaglutide is likely the primary cause of this patient's acute pancreatitis. Healthcare providers should consider discontinuing this GLP-1 receptor agonist in patients who develop acute pancreatitis while on this medication, especially if they have other risk factors for the condition.

CONCLUSION

This case underscores the potential risk of acute pancreatitis associated with GLP-1 RAs, particularly semaglutide. Clinicians should be vigilant for signs of pancreatitis in patients taking these medications,. Given the increasing use of GLP-1 RAs for diabetes and weight management, awareness and monitoring for adverse effects like pancreatitis are crucial. Further research is needed to better define the risk and underlying mechanisms of pancreatitis associated with GLP-1 RA therapy.

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