Peptic Ulcer Disease Following Use of Bupropion: A Case Report

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ABSTRACT

BACKGROUND: Bupropion is a dopamine reuptake inhibitor, which is prescribed as an effective drug for the treatment of depression and as a complementary drug for smoking cessation in more than 50 countries. Although constipation and nausea are known as side effects of Bupropion, gastric ulcer has not been previously reported.

CASE PRESENTATION: In this case report a 28-year-old woman presented with a gastric ulcer 8 months after beginning depression treatment with Bupropion 150 mg once daily. Pantoprazole and Famotidine were prescribed to the patient. However, the gastric ulcer did not heal. After discontinuation of Bupropion, the gastric ulcer was treated.

CONCLUSION: The present case report suggests that Bupropion may lead to peptic ulcers or this drug interferes with the treatment of gastric ulcers.

KEYWORDS: Bupropion, gastric ulceration, side effect, case report, peptic ulcer

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Background

Bupropion is a dopamine reuptake inhibitor, which is prescribed as an effective drug for the treatment of depression and as a complementary drug for smoking cessation in more than 50 countries.[1] FDA approved indications for this drug in attention-deficit/hyperactivity disorder (ADHD), neuropathic pain, and obesity (not FDA-approved). It is a weak inhibitor of the neural uptake of norepinephrine, serotonin, and dopamine. In terms of chemical structure, it is not similar to other well-known antidepressants such as tricyclic and tetracyclic agents or selective serotonin reuptake inhibitors. The mechanism by which Bupropion enhances the ability of patients to quit smoking is unknown, although it may involve the central and/or dopaminergic noradrenergic pathways.[2]

For the cessation of smoking and treatment of depression, Bupropion is usually initiated with a minimal dose of 150 mg per day, which increases to a maintenance dose of 300 mg per day. The maximum dose per day is 450 mg, administered in divided doses.[3] Bupropion is well tolerated at therapeutic doses; however, its common side effects include dry mouth, nausea, and insomnia.[1] According to our literature review, there is no report of gastric ulcers following the consumption of Bupropion. In the present study, we present a case of refractory gastric ulcer following the use of Bupropion, which resolved after the discontinuation of the drug.

Case Presentation

The patient was a 28-year-old female, referred to the emergency department of the Shariati hospital, Tehran, due to abdominal pain and gastrointestinal (GI) bleeding. According to the patient's medical history, she had visited a physician's office 1 month earlier due to Stomach pain. She was treated with pantoprazole (dose of 40 mg, daily).

One month later, GI bleeding occurred, and the patient was referred to our clinic. Based on the self-reported medical history of the patient, she did not have any GI disease or gastric ulcer; also she was not using any ulcerogenic drugs. The patient stated that she had been taking Bupropion 150 mg once a day for 8 months due to depression. She then underwent an endoscopy, and multiple ulcers were observed all over the stomach (Figure 1). The ulcers were sampled several times, and further examinations were performed for refractory peptic ulcers. The result of the test for Helicobacter pylori was negative, and the findings of the abdominal CT scan were normal. The serum levels of calcium, gastrin, and chromogranin A were also within normal ranges (Table 1).

Pantoprazole (40 mg) twice daily was re-administered. However, her abdominal pain did not subside after 4 weeks. Famotidine (40 mg, daily) was added to the therapeutic regimen because we assumed the ulcers were intractable. After 4 weeks, the patient's symptoms did not improve. Although there was no evidence of an association between gastric ulcer

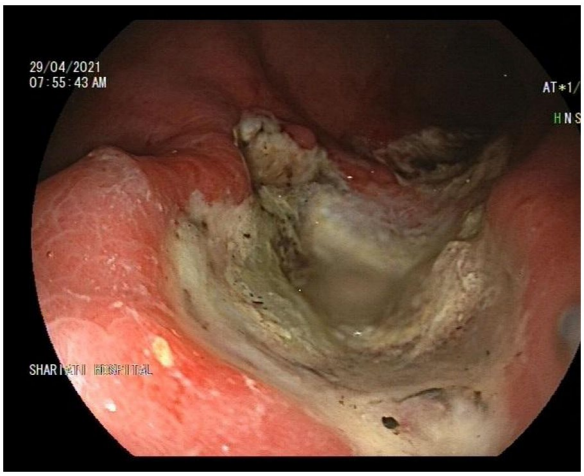

Figure 1. Image of endoscopy before discontinuation of Bupropion.

Table 1. Laboratory finding in the patients.

VARIABLE	SERUM LEVEL
Calcium	9 mg/dL
Gastrin fasting serum gastrin	70 pg
Choromogranin A	20 ng/L

and Bupropion use, we asked the patient's psychiatrist to stop taking Bupropion. Two weeks after Bupropion withdrawal, her abdominal pain was alleviated. Two months later, she underwent an endoscopy again, which revealed a remarkable reduction of peptic ulcers to almost half the initial size (Figures 1 and 2). The patient was asked to return for a follow-up endoscopy within 2 months; however, she refused to undergo a third endoscopy, as her abdominal pain was completely resolved.

Discussion

Peptic ulcers are gastrointestinal lesions caused by acids in the digestive tract; they usually occur in the stomach or the first part of the duodenum. They are characterized by "bare" mucosa, extending toward the submucosa or the propria muscle. According to statistics, peptic ulcer disease affects approximately 4 million people worldwide each year, with a prevalence of 5% to 10% in the general population. It can also cause various complications, such as GI bleeding. The most common risk factors for peptic ulcers are H. pylori infection and the use of Non-Steroidal Anti-Inflammatory Drugs (NSAIDs).[4] In the present case, we initially examined the patient for H. pylori infection and studied her history of taking NSAIDs. We also assessed uncommon risk factors, such as a history of gastric bypass surgery, use of selective serotonin reuptake inhibitors, cigarette smoking, and alcohol or tobacco consumption.

Since the gastrin level was normal, the presence of a gastrin-producing tumor was ruled out. The possible presence of gastric tumors and other possible pathologies was examined by a CT scan, which showed no abnormalities.[2,4]

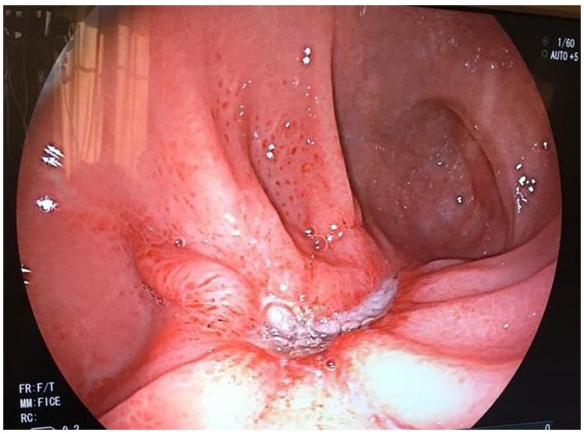

Figure 2. Image of endoscopy after discontinuation of Bupropion.

In drug-related peptic ulcers, discontinuation of the causative drug, along with the use of proton-pump inhibitors, can improve the condition within 6 to 8 weeks in more than 85% of cases.[4] In our patient, Bupropion withdrawal and continuous use of proton-pump inhibitors resulted in a significant reduction in the number of ulcers after 8 weeks. However, the duration of complete healing was not determined, because the patient did not return for the final endoscopy, as her abdominal pain had resolved. Numerous clinical trials examining the effects of this drug on smoking cessation and depression[5,6] have reported some side effects in 10% of users, including gastrointestinal side effects, such as constipation, dry mouth, and nausea.[2] Nevertheless, there is no report of peptic ulcers associated with this drug.

Drug-related peptic ulcers often occur in the elderly with comorbidities and may predispose them to serious complications, such as GI bleeding and perforation. Besides, a history of gastric ulcers, consumption of high doses of this drug, and duration of drug use are among the risk factors reported for drug-related peptic ulcers.[7,8] In the present report, the patient was a young woman, who had been taking Bupropion (in the treatment dose range) for 8 months. She had not used any other medications during Bupropion usage. Also, she had no family history or personal history of peptic ulcers. Therefore, we did not identify any specific risk factors for gastric ulcers in this patient.

Conclusion

Bupropion is a safe and effective drug for the treatment of millions of people suffering from depression and those seeking to quit smoking. However, like many other drugs, it may rarely cause complications. The present case report suggests that Bupropion may lead to peptic ulcers or this drug interferes with the treatment of gastric ulcers. However, the mechanism of ulceration with Bupropion is unclear and needs further studies to be shed light.

List of Abbreviations

Food and Drug Administration (FDA)
Attention Deficit/hyperactivity Disorder (ADHD)

Gastrointestinal (GI)
Non-Steroidal Anti-Inflammatory Drugs (NSAIDs)

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Author Contributions
All authors contributed to the study concept and design, data acquisition, and drafting of manuscript. All authors read and approved the final manuscript.

Availability of Data and Materials
The datasets generated and/or analyzed during the current study are not publicly available due to the institution's opposition but are available from the corresponding author on reasonable request.

Statement of Ethics
Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

REFERENCES
1. Stall N, Godwin J, Juurlink D. Bupropion abuse and overdose. *CMAJ*. 2014;186:1015.
2. Huecker MR, Smiley A, Saadabadi A. Bupropion. In: *StatPearls [Internet]*. StatPearls Publishing; 2022.
3. Aubin H-J. Tolerability and safety of sustained-release bupropion in the management of smoking cessation. *Drugs*. 2002;62 Suppl 2:45-52.
4. Kuna L, Jakab J, Smolic R, Raguz-Lucic N, Vcev A, Smolic M. Peptic ulcer disease: a brief review of conventional therapy and herbal treatment options. *J Clin Med*. 2019;8:179.
5. Sachs GS, Lafer B, Stoll AL, et al. A double-blind trial of bupropion versus desipramine for bipolar depression. *J Clin Psychiatry*. 1994;55:391-393.
6. Scharf D, Shiffman S. Are there gender differences in smoking cessation, with and without bupropion? Pooled- and meta-analyses of clinical trials of Bupropion SR. *Addiction*. 2004;99:1462-1469.
7. Ciubotaru AD, Leferman C-E. Case report: peptic ulcer disease following short-term use of nonsteroidal anti-inflammatory drugs in a 3-year-old child. *F1000Res*. 2021;9:419.
8. Humayun F, Shehab TM, Tworek JA, Fontana RJ. A fatal case of Bupropion (Zyban) hepatotoxicity with autoimmune features: case report. *J Med Case Rep*. 2007;1:1-5.