OPEN ACCESS

DOI: 10.59736/IJP.23.03.969

CASE REPORT

Bupropion induced hypertensive crisis in a healthy male with no prior hypertension

Nadia Siddiq[1], Usama Abbas[1], Noor Fatima Rauf[1], Barak Waris[1], Nauman Ismat Butt[1]

1 Chaudhary Muhammad Akram Teaching and Research Hospital, Azra Naheed Medical College, Superior University Lahore.

ABSTRACT

Background: Bupropion is a norepinephrine-dopamine reuptake inhibitor (NDRI) indicated in treatment of depression, attention deficit hyperactivity disorder (ADHD) and for smoking cessation. Although hypertension is a known side effect, hypertensive crises in previously normotensive individuals is rarely reported.

Case Report: A 26-year-old male took bupropion for depressive symptoms during his exams, but his condition worsened after he started consuming excessive amounts of caffeine and energy drinks. The combination of bupropion and excessive caffeine intake led to hypertension and tachycardia. During his first visit to the emergency department, he presented with a blood pressure of 160/90 mmHg and a heart rate of 110 bpm. On a subsequent visit, these values had increased to 180/110 mmHg and 132 bpm, respectively. Workup ruled out other secondary causes. The symptoms resolved after discontinuation of bupropion.

Conclusion: Clinicians should monitor blood pressure in all patients, including those without known cardiovascular risk.

Keywords: Bupropion, Caffeine, Hypertension, Hypertensive Crisis, Norepinephrine Dopamine Reuptake Inhibitor

This article may be cited as: Siddiq N, Abbas U, Rauf NF, Waris B, Butt NI. Bupropion induced hypertensive crisis in a healthy male with no prior hypertension. Int J Pathol; 23(3):192-5. https://doi.org/10.59736/IJP.23.03.969

Corresponding Author

Nauman Ismat Butt

Chaudhary Muhammad Akram Teaching and Research Hospital, Azra Naheed Medical College, Superior University Lahore

Email: nauman_ib@yahoo.com

Introduction

Bupropion is a second-generation antidepressant of the aminoketone class that acts as a norepinephrine-dopamine reuptake inhibitor (NDRI). It is structurally unrelated to tricyclic antidepressants and is generally considered to have a favorable cardiovascular profile in healthy individuals (1, 2).

Bupropion is widely prescribed for major depressive disorder (MDD), smoking cessation, and off-label for attention-deficit/hyperactivity disorder (ADHD) (3). Known for its stimulating properties, bupropion is generally well tolerated but has been associated with adverse cardiovascular effects, including elevated blood pressure and tachycardia, particularly in susceptible individuals or when combined with other stimulants such as caffeine. Although the

incidence of significant cardiovascular events remains low in young, healthy adults, bupropion can lead to excessive sympathetic stimulation, resulting in vasoconstriction and hypertensive episodes (4, 5).

Most literature focuses on hypertensive responses in patients with preexisting cardiovascular risk factors, and reports of hypertensive crises in normotensive individuals are rare. It is important to be aware of hypertension as it can lead to significant cardiovascular burden, especially in resource limited countries such as Pakistan (6). Herein, we present the case of a 26-year-old healthy male who developed hypertensive urgency and tachycardia shortly after initiating bupropion in conjunction with caffeine use. This case highlights the potential for severe cardiovascular reactions even in low-risk populations and underscores the importance of routine blood pressure monitoring in patients prescribed bupropion, regardless of baseline cardiovascular status.

Case Presentation

A 26-year-old male presented to the emergency department with complaints of palpitations and a persistent headache. He reported increased stress due to ongoing examinations but denied any history of cardiovascular, renal, or neurological conditions. To manage exam-related stress, he had been self-medicating with bupropion at a dose of 150 mg once daily for the past nine days. During the same period, his caffeine consumption had increased significantly and included approximately 4-5 cups of coffee and 500-1000 mL of energy drinks daily. His baseline blood pressure prior to initiating bupropion was 120/70 mmHg, with no known abnormalities. His past medical history was notable only for gastroesophageal reflux disease (GERD), for which he occasionally took antacids. There was no personal history of hypertension. Family history included a paternal uncle who died of myocardial infarction at age 35, maternal hypertension diagnosed at age 45, and a maternal grandfather with diabetes and asthma. On initial examination, his blood pressure was 160/90 mmHg, heart rate was 110 beats per minute, respiratory rate was 18 breaths per minute, oxygen saturation was 98%, and temperature was 36.8°C. Rest of the examination was normal. Bupropion was discontinued, and he was advised to reduce caffeine intake. Home blood pressure monitoring was initiated, with average readings around 140/90 mmHg. A follow-up visit was scheduled for one week later.

However, four days later, the patient returned to the emergency department with worsening palpitations. Despite prior medical advice, he had resumed bupropion and continued consuming caffeine, including coffee and energy drinks daily. On re-examination, his blood pressure had risen to 180/110 mmHg and his heart rate to 132 beats per minute. He was treated with oral metoprolol 25 mg which lowered his blood pressure to 150/100 mmHg. Laboratory investigations including complete blood count, liver and renal function tests, serum electrolytes, urinalysis, and thyroid profile were within normal limits. An electrocardiogram revealed sinus tachycardia without ischemic or hypertrophic changes. Abdominal ultrasound and KUB scan were unremarkable, and transthoracic echocardiography showed no structural abnormalities. A comprehensive evaluation for secondary causes of hypertension was negative. He was again counseled to discontinue both bupropion and caffeine, and a follow-up was scheduled within one week.

At outpatient follow-up one week later, his blood pressure was 130/80 mmHg and heart rate was 86 beats per minute. Given the temporal association between bupropion initiation and the onset of hypertensive symptoms in a previously normotensive individual, and the absence of other identifiable causes, a diagnosis of bupropion-induced hypertension was made. The patient was advised to abstain from caffeine and to avoid any future use of bupropion. Ongoing lifestyle counseling and routine monitoring were recommended, with the next follow-up planned in one month.

Discussion

Bupropion is a norepinephrine-dopamine reuptake inhibitor (NDRI) that enhances synaptic norepinephrine and dopamine levels, leading to increased sympathetic activity (1). While this underlies its antidepressant effects, it may also cause cardiovascular side effects such as vasoconstriction, tachycardia, and hypertension. Though these effects are more common in individuals with preexisting risk factors, cases like this demonstrate that hypertensive crises can also occur in normotensive individuals (2, 3). Bupropion-induced hypertension is thought to result from elevated norepinephrine levels, increased vascular tone, and cardiac output (3). These effects can be exacerbated by concurrent use of sympathomimetic such as caffeine, pseudoephedrine, or amphetamines (7, 8). Additionally, bupropion may impair baroreceptor sensitivity and autonomic regulation, leading to heightened vascular reactivity (9, 10). Dopaminergic modulation may further contribute to sympathetic stimulation. Though rare, similar cases have been documented. Ahmed et al. described atypical chest pain in previously healthy individuals taking bupropion, with symptoms reversing upon discontinuation of drug, supporting a direct drug effect (11). Our case similarly highlights the potential for dangerous cardiovascular responses with bupropion, particularly when combined with high caffeine intake.

These findings underscore the importance of blood pressure monitoring in all patients starting bupropion, regardless of baseline risk. Patients should be counseled to avoid other stimulants, and the drug should be discontinued in cases of significant hypertension. Even in healthy individuals, stress, genetic predisposition, or autonomic factors may increase susceptibility. While bupropion remains an effective treatment for depression and smoking cessation, caution is warranted, especially when used off-label or in high-stress settings. Clinicians should remain alert to early signs of cardiovascular side effects and consider alternative treatments where appropriate. Further studies are needed to clarify risk factors for bupropion-induced hypertensive reactions.

Conclusion

This case illustrates that young, otherwise healthy individuals can develop serious cardiovascular side effects from the combination of bupropion and caffeine. Given its widespread use, clinicians should monitor blood pressure in all patients, including those without known cardiovascular risk.

Financial disclosure: None

Conflict of interest: None.

References

1. Clark A, Tate B, Urban B, Schroeder R, Gennuso S, Ahmadzadeh S, et al. Bupropion Mediated Effects on Depression, Attention Deficit Hyperactivity Disorder, and Smoking Cessation. Health Psychol Res. 2023; 11:81043. Doi: 10.52965/001c.81043.

2. Huecker MR, Smiley A, Saadabadi A. Bupropion. [Updated 2024 Sep 2]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK470212/.
3. Howes S, Hartmann-Boyce J, Livingstone-Banks J, Hong B, Lindson N. Antidepressants for smoking cessation. Cochrane Database Syst Rev. 2020; 4(4):CD000031. Doi: 10.1002/14651858.CD000031.pub5.
4. Han J, Kim M, Kim Y, Lee SH, Shin S, Choi YJ. Identifying Predictors of Serious Adverse Events in Antidepressant Treatment from a Decade-Long Nationwide Pharmacovigilance Study: Impact of Dementia and Parkinson's disease Treatment. Medicina (Kaunas). 2025; 61(6):1103. Doi: 10.3390/medicina61061103.
5. Harini K, Alomar SY, Vajagathali M, Manoharadas S, Thirumalai A, Girigoswami K, et al. Niosomal Bupropion: Exploring Therapeutic Frontiers through Behavioral Profiling. Pharmaceuticals (Basel). 2024; 17(3):366. Doi: 10.3390/ph17030366.
6. Waris B, Butt NI, Afzal A, Ghoauri MSA, Khizar I, Mahmood K, et al. Exploring knowledge of hypertension and treatment adherence in hypertensive patients from Lahore, Pakistan. Cureus. 2025; 17(4):e81762. Doi: 10.7759/cureus.81762.
7. Calvi A, Fischetti I, Verzicco I, Belvederi-Murri M, Zanetidou S, Volpi R, et al. Antidepressant Drugs Effects on Blood Pressure. Front Cardiovasc Med. 2021; 8:704281. Doi: 10.3389/fcvm.2021.704281.
8. Aronow WS. Drug-induced causes of secondary hypertension. Ann Transl Med. 2017; 5(17):349. Doi: 10.21037/atm.2017.06.16.
9. Kessler RC, Berglund P, Demler O, Jin R, Koretz D, Merikangas KR, et al; National Comorbidity Survey Replication. The epidemiology of major depressive disorder: results from the National Comorbidity Survey Replication (NCS-R). JAMA. 2003; 289(23):3095-105. Doi: 10.1001/jama.289.23.3095.
10. Kandukuru A, Sharma P, Verghese-Gupta S, Nkembo A, Sutariya V. Cardiovascular adverse events associated with norepinephrine-dopamine reuptake inhibitors: a pharmacovigilance study of the FDA Adverse Event Reporting System. Can J Physiol Pharmacol. 2024; 102(12):709-719. Doi: 10.1139/cjpp-2024-0128.
11. Ahmed H, Ismayl M, Palicherla A, Selim M, Aboeata A. Bupropion-disguised chest pain presenting in a middle-aged male: a case report and review of literature. Ann Med Surg (Lond). 2024; 86(7):4213-4216. Doi: 10.1097/MS9.0000000000002175.

HISTORY	
Date received:	29-07-2025
Date sent for review:	25-08-2025
Date received reviewers comments:	12-09-2025
Date received revised manuscript:	24-09-2025
Date accepted:	25-09-2025

CONTRIBUTION OF AUTHORS	
AUTHOR	**CONTRIBUTION**
Conception/Design	NS, UA, NFR, BW, NIB
Data acquisition, analysis and interpretation	NS, UA, NFR, BW, NIB
Manuscript writing and approval	NS, UA, NFR, BW, NIB
All the authors agree to take responsibility for every facet of the work, making sure that any concerns about its integrity or veracity are thoroughly examined and addressed.	