TURKISH JOURNAL OF EMERGENCY MEDICINE

Case Report/Case Series

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Quick Response Code:

Website: https://journals.lww.com/TJEM

DOI: 10.4103/tjem.tjem_308_25

Disulfiram-like reaction with ornidazole: A case report of a rare interaction

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Abstract:

A disulfiram-like reaction (DLR) associated with ornidazole is a rare but important adverse drug-alcohol interaction. We report a 44-year-old female with no known comorbidities or drug allergies who presented to the emergency department with palpitations, nausea, vomiting, facial flushing, and acral hyperemia. Her symptoms began approximately 30 min after consuming two glasses of raki while receiving ornidazole for a pilonidal cyst. On examination, she was found to be hypotensive and tachycardic. Laboratory results were within normal limits. Her symptoms improved significantly with supportive care over 16 h. A Naranjo Adverse Drug Reaction Probability Scale score of 7 indicated a probable relationship with ornidazole. This case represents a rare instance of a DLR due to ornidazole monotherapy in a patient without chronic alcohol use. Clinicians should be aware of this potential interaction and advise patients to avoid alcohol consumption during ornidazole therapy to prevent DLRs.

Keywords:

Adverse reactions, disulfiram, drug-related side effect, ornidazole

Introduction

Disulfiram was originally used to treat scabies until the 1940s, although its alcohol-interaction effects had been recognized since the late 19th century. In 1948, Erik Jacobsen proposed its use for alcohol dependence.[1] Disulfiram inhibits the enzyme aldehyde dehydrogenase (ALDH), thereby preventing the conversion of acetaldehyde to acetic acid. This results in the accumulation of acetaldehyde, which leads to symptoms such as nausea, vomiting, headache, flushing, hypotension, tachycardia, and, in severe cases, seizures occurring within approximately 30 min of alcohol consumption.[2,3] Disulfiram-like reactions (DLRs) have also been reported with other medications, most notably metronidazole and cephalosporins. Additional cases have involved ketoconazole, griseofulvin, sulfonamides, and isoniazid.[4]

Ornidazole is a nitroimidazole compound structurally analogous to metronidazole. Owing to this structural similarity, it exerts antimicrobial activity through a comparable mechanism of action and is used in the treatment of infections caused by anaerobic bacteria and protozoa.[5] It is important to note that DLRs associated with nitroimidazoles are not mediated by ALDH inhibition, and their underlying pathophysiological mechanism remains unclear.[6,7] Although metronidazole-induced

Submitted: 18-08-2025
Revised: 25-10-2025
Accepted: 15-12-2025
Published: 03-04-2026

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How to cite this article: Orhan E, Orhan B, Ceylan C. Disulfiram-like reaction with ornidazole: A case report of a rare interaction. Turk J Emerg Med 2026;26:150-2.

DLRs have been reported more frequently in the literature, ornidazole-induced DLRs are uncommon, with only two case reports found in our review.[8,9]

Case Report

A 44-year-old female presented to the emergency department with palpitations, nausea, vomiting, facial flushing, and acral hyperemia [Figure 1]. She had no history of chronic illness, regular medication or alcohol use, drug or food allergies. Ornidazole 500 mg three times daily had been prescribed for a pilonidal cyst. Symptoms began on the 2nd day of therapy, approximately 3 h after the last dose, and 30 min after drinking two glasses of raki, a traditional Turkish spirit containing 40% alcohol by volume.

On physical examination, blood pressure was 96/54 mmHg, heart rate 113 bpm, respiratory rate 24 per minute, and oxygen saturation 98%. She had facial flushing and bilateral distal hyperemia of the hands and feet, and appeared anxious and diaphoretic. The only notable laboratory findings included a hemoglobin level of 11.5 g/dL, white blood cell count of 7680/µL, pH 7.37, bicarbonate 26 mmol/L, and lactate 2.03 mmol/L. Other tests, including kidney and liver function tests and electrolytes, were within normal limits. The electrocardiogram showed sinus tachycardia.

After supportive treatment with intravenous fluids and 2 mg ondansetron, symptoms resolved. Laboratory tests at 8 h remained within normal limits. She was discharged asymptomatic after 16 h and advised to avoid alcohol. A follow-up call on day 3 confirmed full recovery.

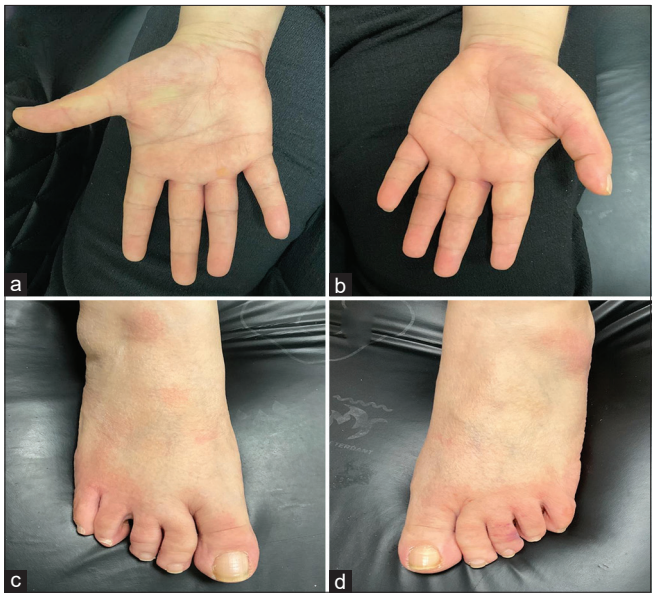

Figure 1: Distal hyperemia of the patient's extremities: (a) palmar hyperemia of the right hand; (b) palmar hyperemia of the left hand; (c) plantar hyperemia of the right foot; (d) plantar hyperemia of the left foot

Written informed consent was obtained from the patient for the use of clinical data and accompanying images in this publication.

Discussion

DLRs are rare but clinically relevant adverse effects that are often underrecognized in routine clinical practice. This case presents a clinically significant interaction between ornidazole and alcohol in a previously healthy female, manifesting with classical DLR symptoms such as tachycardia, hypotension, facial flushing, nausea, and vomiting. Notably, this case involved a patient without a history of chronic alcohol use or comorbidities, highlighting the potential risk of ornidazole even in low-risk individuals.

While metronidazole has been more frequently associated with DLRs, reports involving ornidazole remain limited. In the case reported by Guler *et al*., a young male patient presented with dizziness, sweating, palpitations, and flushing approximately 30 min after alcohol intake while receiving ornidazole and ciprofloxacin.[8] Sharma *et al*. reported a case in which a male patient with a history of chronic alcohol use experienced similar symptoms 2 h after alcohol consumption during concurrent treatment with ofloxacin and ornidazole.[9] Both previously reported cases involved male patients undergoing combination therapy. In contrast, our patient received ornidazole monotherapy, underscoring the potential of ornidazole alone to induce DLRs.

Although the patient described by Sharma *et al*. had a history of chronic alcohol use, neither the case reported by Guler *et al*. nor our patient had such a background.[8,9] This suggests that even moderate alcohol consumption can provoke a DLR in otherwise healthy individuals. Our case received a score of 7 on the Naranjo Adverse Drug Reaction Probability Scale, indicating a probable relationship between ornidazole and the reaction.[10] Despite the Centers for Disease Control and Prevention's current stance that nitroimidazoles do not inhibit ALDH and therefore do not warrant alcohol abstinence, our case – as well as other published reports – suggests that nitroimidazoles, including ornidazole, may still precipitate clinically significant DLRs.[11] Although the exact pathophysiological mechanism remains uncertain, these observations indicate that caution is warranted. The interaction appears to occur with variable frequency and a wide range of severity.

The temporal relationship between alcohol ingestion and symptom onset is a key diagnostic indicator of DLRs. In our case, symptoms developed approximately 30 min after alcohol consumption, similar to the 30–45-min onset reported by Guler and Sharma.[8,9] In all three cases, alcohol

was consumed 2–3 h after drug administration, aligning with the known pharmacokinetics of nitroimidazoles.[5] This consistent time frame across cases supports the hypothesis of an acute pharmacologic interaction rather than a coincidental occurrence.

Differential diagnoses included anaphylaxis, sepsis, and anxiety. However, normal inflammatory markers, the absence of respiratory allergic symptoms, the presence of atypical skin lesions without mucosal involvement, and further exploration of the patient's history ruled out allergic and septic causes. Although anxiety was initially considered, the clinical presentation and timing of symptom onset favored a pharmacologic reaction over a psychogenic origin.

The treatment of DLRs is primarily supportive, consisting of fluid resuscitation to restore intravascular volume and vasopressor support when necessary to maintain adequate perfusion. Cases requiring vasopressor therapy in addition to supportive fluid administration have been reported in the literature.[12] However, similar to most previously described cases, our patient responded well to intravenous crystalloid therapy alone without the need for vasopressors.

The main limitation of this report is that it describes a single patient, and thus, the findings cannot be generalized. Biochemical confirmation of the disulfiram-like reaction, such as acetaldehyde measurement or aldehyde dehydrogenase activity testing, was not performed. In addition, causality was assessed only using the Naranjo probability scale, and long-term follow-up was not available.

Conclusion

Given the widespread use of ornidazole for anaerobic infections, clinicians – particularly those working in emergency settings – should be aware of the potential for DLRs in patients presenting with acute flushing, tachycardia, hypotension, and gastrointestinal symptoms during nitroimidazole therapy. Patients should be explicitly advised to avoid alcohol consumption while receiving treatment with nitroimidazole derivatives such as metronidazole or ornidazole.

Author contributions statement

EO: Conceptualization (equal); Data curation (lead); Investigation (lead); Project administration (lead), Resources (equal); Visualization (lead); Writing – Original draft (equal); Writing – Review and editing (equal). BO: Conceptualization (equal); Data curation (supporting); Resources (equal); Visualization (supporting); Writing – original draft (equal); Writing – Review and editing (equal). CC: Conceptualization (equal); Data curation (supporting); Resources (equal); Visualization (supporting); Writing – Original draft (equal); Writing – Review and editing (equal).

Conflicts of interest

None Declared.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

Funding

None.

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