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Successful Treatment of Suicide Attempt by Megadose of Propafenone and Captopril

Ahmet Avci · Ahmet Yilmaz · Mustafa Celik · Kenan Demir · Fikret Keles

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Abstract Intoxication caused by propafenone is very rare, and there is no case reported before propafenone and captopril intoxication together. There are few case reports in the literature about intoxication with more than 6 g of propafenone. We present the clinical manifestation and successfully treatment of 9 g of propafenone and 1 g captopril intoxication in an 18-year-old female. An 18-year-old female was brought to the emergency department approximately half an hour after she committed suicide with 30 propafenone tablets, 300 mg each, and 20 captopril tablets, 50 mg each. Her fist electrocardiography (ECG) shows a chaotic ventricular rhythm with a prolonged QRS complex. After fluid and sodium bicarbonate infusion and permanent pacemaker implantation, sinus rhythm was achieved. This case, to our knowledge, is the first in that it describes the successful recovery of a patient who ingested extensively large doses of propafenone (9 g) and captopril (1 g), both of which are known to have severe cardiac side effects.

Keywords Propafenone · Captopril · Poisoning · Suicide attempt

Introduction

Propafenone is a class 1C anti-arrhythmic agent used in the treatment of life-threatening arrhythmias such as ventricular arrhythmia and atrial fibrillation [1]. The mechanism of action is through the blockage of sodium and calcium channels which ultimately lead to an increase in QRS duration without QT prolongation. An overdose, particularly more than 4 g, may be fatal [2, 3]. Intoxication with propafenone may lead to several rhythm disorders such as sinus bradycardia, atrial fibrillation, right bundle branch block, AV block, sinus arrest, ventricular tachycardia, and fibrillation as well as to symptoms such as hypotension, acidosis, myoclonus, depression of mental functions, and convulsions [4]. The half life of propafenone is estimated to range from 2 to 12 h depending on the genetic predisposition. Peak plasma level is reached approximately in 2–3 h after administration and elimination occurs both in the liver (57 %) and in the kidneys (18–39 %) [5, 6].

Captopril, on the other hand, is an ACE inhibitor with a maximum daily dose of 450 mg. Intoxication with captopril is rare and is associated with hypotension, increased serum sodium, and potassium levels and renal failure [7].

We herein present the successful management of an otherwise healthy 18-year-old female who attempted suicide with propafenone and captopril.

Case Report

An 18-year-old female was brought to the emergency department approximately half an hour after she committed suicide with 30 propafenone tablets, 300 mg each, and 20 captopril tablets, 50 mg each. She had been intubated at the scene and was inserted a nasogastric tube for gastric lavage during transportation to the hospital. On admission she was unconscious, she had no pulse and no spontaneous respiration, her pupils were isochoric, and the pupillary light reflex was absent. Her Glasgow Coma Score was four. Her heart rate was 45 beats per minute (bpm), blood pressure was 50/30 mmHg, and oxygen saturation was 80 %. A complete

A. Avci · A. Yilmaz (✉) · M. Celik · K. Demir · F. Keles
Selcuklu Tip Fakultesi, Kardiyoloji AD, Selcuk Universitesi, 42075 Kampus, Konya, Turkey
e-mail: dr.ahmetyilmaz@gmail.com

blood analysis revealed normal serum electrolyte levels, normal liver and kidney function, and normal blood glucose level. Electrocardiography (ECG) revealed a chaotic ventricular rhythm with a prolonged QRS complex (Fig. 1). The patient sustained a cardiac arrest during her stay in the emergency department but fortunately recovered after approximately 5 min of successful cardio-pulmonary resuscitation (CPR). Post-CPR ECG revealed an idioventricular rhythm and a prolonged QRS. Although the patient was administered noradrenalin and received a substantial amount of fluid and sodium bicarbonate through several peripheral lines, she was hemodynamically unstable with a heart rate of 45 bpm and a large QRS complex in the ECG. A transfemoral pacemaker was implanted and the patient was followed up in the Intensive Care Unit. Within approximately 22 h from the procedure, she reverted to normal sinus rhythm and restored hemodynamic stability (Fig. 2). Positive inotropic agents and fluid were gradually stopped, and the patient was extubated following restoration of spontaneous respiration. The temporary pacemaker was removed. Repeat ECG revealed normal sinus rhythm, and the patient was discharged from the hospital without any symptoms 2 days after her admission.

Discussion

Although propafenone is widely used in the treatment of arrhythmic disorders, intoxication has seldom been reported. Propafenone is available as 150 and 300 mg tablets in Turkey, and the recommended daily dose is between 450 and 600 mg. Peak serum concentration is reached in 2–3 h after drug administration [6]. The rate of intestinal absorption is high, and propafenone is subject to first-pass metabolism in the liver which is controlled by the liver CYP2D6 enzyme system. Norpropafenone and 5-hydroxypropafenone (active form) are the two major metabolites of propafenone. While the half life is generally accepted to be around 6 h, this may vary and range between 2 and 12 h depending on genetic variations [6].

Propafenone shortens the refractory period and depresses sinoatrial (SA) and atrioventricular (AV) nodal conduction in the heart [5]. Following intoxication, a wide range of cardiac arrhythmias, including sinus bradycardia, atrial fibrillation, right bundle branch block, AV block, sinus arrest, ventricular tachycardia, and fibrillation as well as symptoms such as hypotension, acidosis, myoclonus, impaired cognitive functions, and convulsions, may be observed [8]. Death is usually related to electromechanical dissociation, malignant arrhythmias, or cardiac asystole [9]. Captopril, on the other hand, is an ACE inhibitor and may lead to toxicity beyond 450 mg/day. Although its intoxication has seldom been reported in the literature, it may cause renal failure, hyperkalemia, and hypotension [7].

Gastric lavage is the cornerstone of treatment in propafenone intoxication [4]. In addition to gastric lavage, intravenous sodium bicarbonate has also been shown to

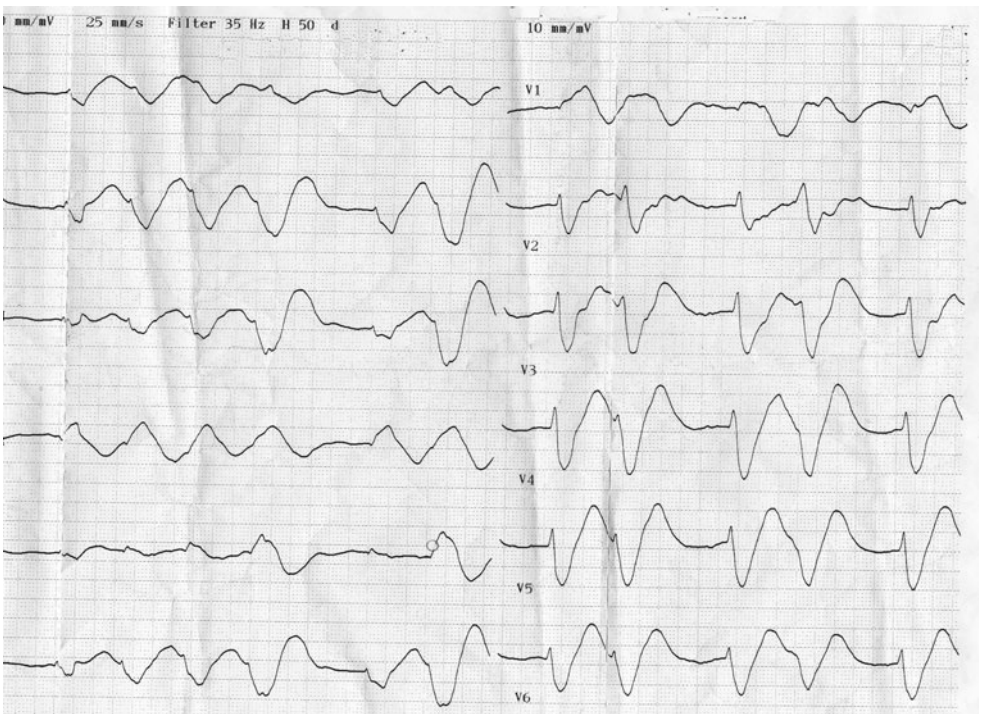

Fig. 1 Twelve lead ECG at the time of admission to the emergency service showing chaotic ventricular rhythm with a prolonged QRS complex

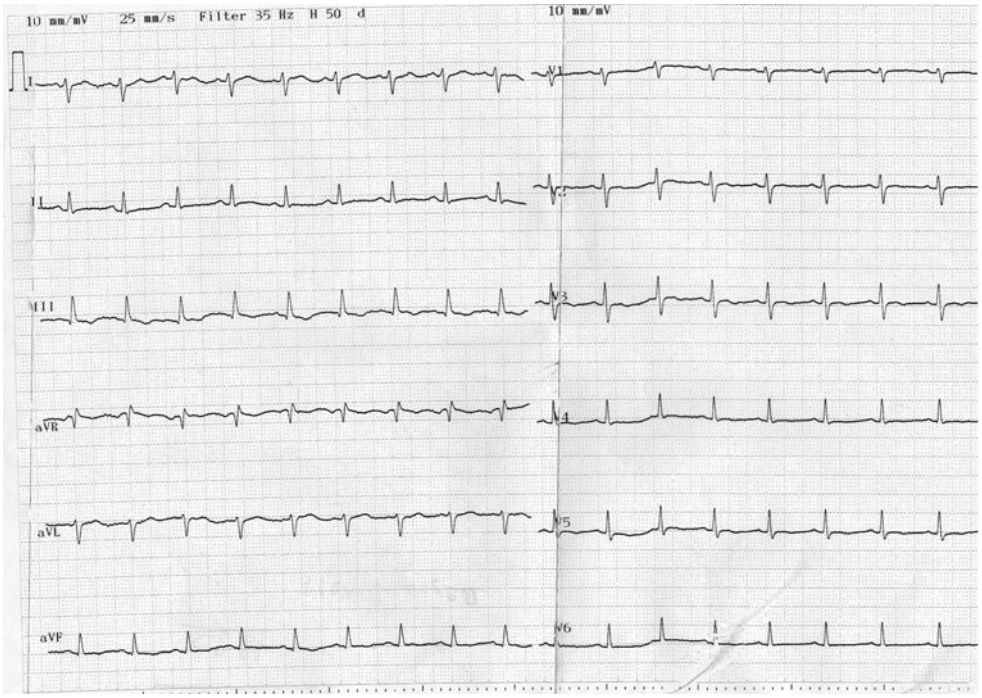

Fig. 2 Twelve lead ECG after 22 h of admission to the emergency service showing normal sinus rhythm HR:100 bpm

reduce cardiovascular side effects [10, 11]. A temporary pacemaker may be implanted if there is a block in the heart's electrical conduction system. Hypoxia, hyperkalemia, and acidosis may completely block the electrical stimulation; in this situation, the use of an intraaortic balloon pump may support circulation [12, 13].

In the current case, a combination strategy involving the use of a pacemaker together with a positive inotropic agent, intravenous sodium bicarbonate and fluid therapy proved efficient and obviated the use of an intraaortic balloon pump device.

Conclusion

Although prolonged QRS and successful recovery due to 6 g of propafenone intoxication has been reported previously [14], the current case, to our knowledge, is the first in that it describes the successful recovery of a patient who ingested extensively large doses of propafenone (9 g) and captopril (1 g), both of which are known to have severe cardiac side effects.

Conflict of interest None.

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