



## Type 2 Myocardial Infarction due to Severe Hypotension Secondary to Oral Minoxidil Overdose

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### Clinical Case

Low-Dose Oral Minoxidil (LDOM) has been proven effective and safe in treatment of women with Female Pattern Hair Loss (FPHL) in last year's [1-3]. It could be an alternative to topical minoxidil, which is the only approved therapy by the Food and Drug Administration and European Medicine Agency [4], especially in patients who complain altered hair texture or produce them contact dermatitis. Postural hypotension and heart rate alterations occurred in <2% of patients, but serious cardiovascular complications are rare [3].

A 43-year-old woman without relevant medical history and treated with LDOM (0.5 mg daily) since 2 months ago was admitted to our hospital with a presyncopal episode in the context of sustained severe hypotension. She complained dizziness, blurred vision and chest discomfort. Physical examination at emergency department showed arterial hypotension (76/37 mmHg), tachycardia with 120 beats per minute, and ECG with abnormal repolarization suggestive of subendocardial ischemia (1-mm ST segment depression in leads I-II and V4-V6, and 0.5 mm in III-aVL and aVF) (Figure 1, panel A). Initial creatinine was 1.60 mg/dL (normal if <1.00) and troponin I 0.067 ng/mL (normal if <0.056). With the diagnosis of suspected type 2 acute myocardial infarction and prerenal renal failure, the patient was transferred intensive care unit for volume replacement and hemodynamic monitoring. The patient was hemodynamically stabilized in a few hours and was asymptomatic. Subsequent high-sensitivity troponin I determinations demonstrated ischemic curve (0.085-0.100-0.055-0.012 ng/mL) (Figure 1, panel B) and coronary angiography was indicated. Given the low cardiovascular risk of the patient, a coronary CT was finally performed showing arteries without lesions (Figure 1, panel C). The patient was discharged with a normal echocardiogram and a negative exercise test for ischemia in outpatient control at two weeks.

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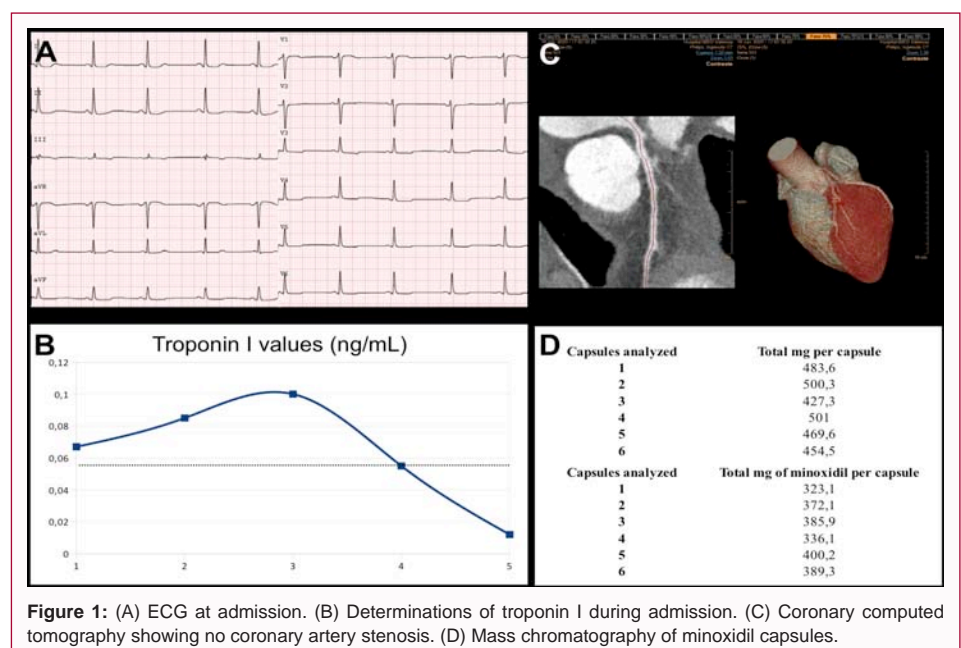
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**Figure 1:** (A) ECG at admission. (B) Determinations of troponin I during admission. (C) Coronary computed tomography showing no coronary artery stenosis. (D) Mass chromatography of minoxidil capsules.

A more thorough history at this medical consultation revealed that the patient started a new bottle of capsules on event day. Since medication was prescribed as magistral formula, drug evaluation was therefore decided. Analysis by mass chromatography (Acquity® TQD system) confirmed an overdose of minoxidil with a preparation range between 300 and 400 mg per capsule (Figure 1, panel D). This amounts from 700 to 800 more doses than the one prescribed by the dermatologist.

To our knowledge, we present the first clinical case of myocardial infarction due to oral minoxidil overdose. Previously, few clinical cases had reported in the literature ECG changes (ST: segment depression and T: wave inversion) and symptoms related to myocardial ischemia in context of minoxidil intoxication [5]. Based on the risk of serious cardiovascular disorders, such as chest pain, tachycardia, or congestive heart failure, and since benefits have not been sufficiently verified, oral minoxidil is not approved as a treatment drug for male or FPHL in any country [6]. If future randomized trials clearly define the efficacy and safety of LDOM in this context, this case illustrates the need of a pharmaceutical formulation for this indication and thus avoids preparation errors such as those described.

**Keywords:** Oral minoxidil; Female pattern hair loss; Myocardial infarction; Overdose.

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