

Myocardial Infarction Related With Epinephrine Overdose In Anaphylaxis

Anafilaktik Reaksiyonda Epinefrin Aşırı Dozuna Bağlı Miyokard Enfarktüsü

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Abstract

Epinephrine is an agent which is often used in the treatment of anaphylactic reaction. It has been reported that chest pain, myocardial infarction and arrhythmia may occur secondary to epinephrine use in anaphylactic reactions. In this report, we presented a case with anaphylaxis who developed myocardial infarction secondary to epinephrine, which was ordered to be administered subcutaneously but administered intravenously by mistake.

Keywords: Anaphylaxis, Epinephrine, Myocardial infarction

Özet

Epinefrin anafilaktik reaksiyonun tedavisinde sıklıkla kullanılan bir ajandır. Anafilaktik reaksiyonlarda epinefrin kullanımına bağlı göğüs ağrısı, miyokardiyal enfarktüs ve aritmi olabileceği bildirilmiştir. Biz bu makalede ciddi anafilaksisi olan bir hastada, subkutan olarak order edilen ancak yanlışlıkla intravenöz olarak uygulanan epinefrinin neden olduğu miyokardiyal enfarktüsü sunduk.

Anahtar Kelimeler: Anafilaksi, Epinefrin, Miyokard enfarktüsü

Introduction

Epinephrine is an indispensable medication in anaphylactic reactions. It is often administered as subcutaneously or intramuscular. In these cases, applied epinephrine value is as 1/1000. But sometimes, in severe cases, can be used intravenously and should be diluted (at most 1/10000)[1]. Serious cardiac adverse reactions have been reported on epinephrine intravenous use[2]. These side-effects are frequently caused by the coronary spasm resulted by epinephrine[3]. Patients were medicated with epinephrine, should be monitored closely in case of possible side effects[4].

Case Report

24-year old female patient admitted to our emergency clinic with the complaint of dyspnea. It was learned that she started to use amoxicilline due to upper respiratory tract disease on the same day and she had severe stridor for a few hours. Since uvula was swollen on physical examination. 45,5 mg pheniramine intravenous (iv), 40 mg methylprednisolone iv, subcutaneous 0.3 mg epinephrine

(1/1.000) and nasal oxygen were ordered but epinephrine was administered intravenously by mistake. Following epinephrine administration, she developed palpitation, chest and back pain. On ECG, ST elevations in lateral derivations, reciprocal ST depressions on anterior and inferior derivations were present (Figure 1). Her blood pressure was measured as 60/40 mmHg and intravenous fluid resuscitation was started. Bedside echocardiography revealed hypokinesis of mid-basal segment of lateral wall and no accompanying valvular dysfunction was present. Contrast enhanced computed tomography was performed to exclude aortic dissection and no dissection was detected. Measured systemic blood pressure following fluid replacement was 90/50 mmHg and she was taken to catheter unit for coronary angiography. Coronary angiography revealed nothing pathological (Figure 2-3). The patient was taken to intensive care unit where rising (4,63 ng/mL) and falling pattern of troponin values and T wave negativity on lateral derivations of ECG were detected during follow up. The patient was discharged with oral verapamil and she has been on follow up for 3 months without any complaint.

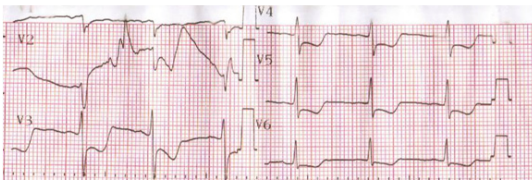
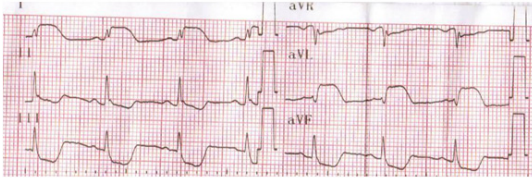


Figure-1: ECG is showing ST elevations on lateral derivations, reciprocal ST depressions on anterior and inferior derivations

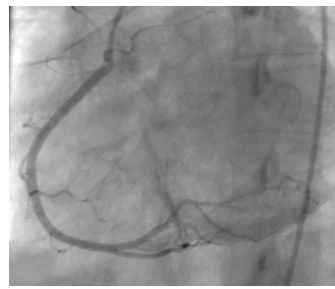
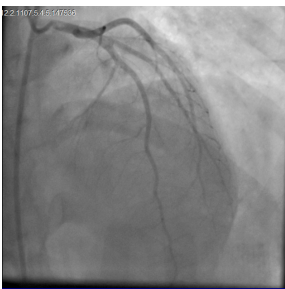


Figure-2: Normal left coronary angiogram

Figure-3: Normal right coronary angiogram

Discussion

Drug related allergic reactions may have a wide variety of clinical presentations varying from simple skin rashes to severe anaphylactic reactions. Patients who develop acute reaction usually need emergent care for diagnosis and treatment. Antihistaminic agents and steroids are the first line drugs in the treatment, while epinephrine is an important treatment choice for cases with severe symptoms. [2]. In the literature, chest pain, myocardial infarction and arrhythmia cases related to epinephrine use for anaphylactic reactions have been reported [3, 4]. As in our case, most of these reported cases are young and have no major risk factors for coronary artery disease [5-10]. Also the patient has no history of hypercoagulable state or drug addiction. Myocardial infarction induced by epinephrine is related to coronary spasm in susceptible patients [11]. Although our case had myocardial infarction secondary to non-diluted and relatively high dose of epinephrine, cases with myocardial infarction following administration of therapeutic dose epinephrine have also been reported in the literature [8-10]. While administration of high dose epinephrine usually causes hypertensive state, our case interestingly had paradox hypotension responsive to treatment. Allergic reactions may also cause myocardial infarction which is called as Kounis syndrome [12]. Since our case had no chest pain on admission and her complaints occurred

following epinephrine administration, this condition was thought to be secondary to epinephrine overdose.

Conclusion

Epinephrine use in anaphylactic reactions is unavoidable, care must be taken during administration and patient must be closely monitored for potential cardiac side effects.

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