



## Case Report

## Kounis syndrome due to hirudotherapy (leech therapy) in emergency department; a case report

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## ABSTRACT

Kounis Syndrome is the development of acute coronary syndrome (ACS) because of allergic reactions; allergens, such as foods, insect venom, iodine contrast agent or drugs can cause this syndrome. Hirudotherapy (leech therapy) is increasingly used as a useful therapeutic option in a variety of medical and surgical procedures, and potential complications related to this therapy include Aeromonas species infections, bleeding, anemia and allergic reactions. Here, we present a patient diagnosed as Type 1 Kounis Syndrome after using hirudotherapy for her knee aches. 41-year-old woman admitted to emergency department with sudden onset of face edema, shortness of breath and chest pain complaints and diagnosed as an allergic reaction and anaphylaxis due to leech therapy. Kounis Syndrome should be considered in acute coronary syndrome patients who were admitted to emergency department with anaphylaxis clinic.

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## 1. Introduction

Kounis syndrome (KS) is the development of acute coronary syndrome (ACS) associated with an allergy, hypersensitivity, anaphylactic or anaphylactoid reactions with activation of mast cells as defined first in 1991.<sup>1,2</sup> Hirudotherapy (leech therapy) is increasingly used as a useful therapeutic option in a variety of medical and surgical procedures, and potential complications related to this therapy include Aeromonas species infections, bleeding, anemia and allergic reactions.<sup>3</sup>

In this article, we aimed to present a very rare case of a Kounis Syndrome (Type 1) after hirudotherapy (leech therapy) implementation which was diagnosed in emergency department.

## 2. Case presentation

41-year-old woman admitted to emergency department with sudden onset of face edema, shortness of breath and chest pain complaints. These complaints were suddenly developed after implementation of leech therapy for the left knee aches. We learned that the leech therapy was used for knee aches earlier, allergic reaction wasn't seen before and there was no additional disease or history of allergy for any food or drug in her past medical history. Also the patient had no history of drug use. It was determined that the patient was agitated, tachycardic and tachypneic. Blood pressure was 80/40 mmHg, pulse rate was 130 beats/min, oxygen saturation was 84% and respiration rate was 26 breaths/min in vital signs. Widespread redness on the body, edema on the lips and eyelids, and a little edema of uvula were detected on physical examination. The patient was diagnosed as an allergic reaction and anaphylaxis due to leech therapy, and 100% O<sub>2</sub> inhalation therapy, intravenous antihistamine and prednisolone treatment were administered. Electrocardiography (ECG) was taken from the patient and ECG revealed ST elevation in inferior derivations and ST depression in anterior and lateral derivations (Fig. 1). Bedside Echocardiogram was considered normal. Serum CK-MB, troponin I

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**Fig. 1.** ECG revealed ST elevation in inferior derivations and ST depression in anterior and lateral derivations.

and LDH levels were normal in laboratory. After O<sub>2</sub> inhalation therapy, intravenous antihistamine and prednisolone administrations, the patient was hemodynamically stabilized and serial ECG recordings showed regression of ST-elevations. Coronary angiography was performed and normal Left and Right Coronary in Coronary Angiography (Fig. 2) was detected. By this way the patient diagnosed as Type 1 Kounis Syndrome. The patient was followed in coronary intensive care unit and oral antihistaminic treatment continued. Patient whose follow-up and treatments were successfully completed was discharged.

### 3. Discussion

Hirudotherapy is used in traditional folk medicine for venous disorders, bloodletting, all types of headache, migraine, arthritis, glaucoma, abscesses, hypertension, impotence, acne, rheumatism, epilepsy, diabetic wounds, surgery scars and pain relief.<sup>4</sup>

A systemic allergic reaction is a clinical condition that varies from mild skin lesions to anaphylactic shock that may develop within minutes-hours after exposure to allergens. Anaphylaxis is a form of life-threatening reaction of an acute urticaria or allergic reaction and is usually accompanied by severe skin, respiratory and cardiovascular system findings, as well as the only finding to diagnose an anaphylaxis is the hypotension that develops after

exposure to allergen in clinical findings.<sup>5,6</sup> Allergic reactions following Hirudotherapy have already been reported.<sup>7</sup> A severe type-IV hypersensitivity reaction following pruritus, erythema, facial edema and nasal obstruction following hirudotherapy has been reported in literature.<sup>8</sup> We reported allergic reactions and severe anaphylaxis accompanied with hypotension and tachycardia which were the most obvious findings of anaphylaxis following Hirudotherapy in our case.

Even though hirudin is the best known substance produced by leeches, proteomic analysis has revealed that their saliva contains more than 100 proteins with molecular weight ranging from 10–97 kD, as well as the proteins found in the saliva show seasonal changes, but even the amount of the outbreak varies depending on the duration of blood absorption.<sup>9</sup> This explains why our patient has not developed allergy and anaphylaxis despite repeatedly implementing hirudotherapy.

Allergens, such as foods, insect venom, iodine contrast agent or drugs can cause Kounis syndrome.<sup>10</sup> Kounis syndrome is a potentially life-threatening medical emergency with both acute coronary syndrome and a severe allergic reaction which can occur even in patients with angiographically normal coronary arteries. Three subtypes of KS have been defined in nowadays. Type 1 occurs in patients without coronary atherosclerosis, type 2 occurs in patients with previous atherosclerosis, and type 3, which has been defined



**Fig. 2.** Normal Left and Right Coronary in Coronary Angiography.

in recent years, occurs after drug eluting stent implantation.<sup>11</sup> Our patient diagnosed as Type 1 Kounis Syndrome because normal left and right coronary in coronary angiography (Fig. 2) was detected.

Airway management, supplemental oxygen, intravenous fluid, glucocorticoids, H1 antihistamines, and H2 antihistamines are recommended by national guidelines for treatment of anaphylaxis; and they emphasize that prompt intramuscular injection of adrenaline (epinephrine) is the initial treatment.<sup>12</sup> The main treatment of Kounis syndrome is the management of ACS and the suppression of the allergic reaction. Suppression of allergens by steroids and antihistamines may eliminate coronary vasospasm alone in these patients.<sup>13</sup> Dramatic response to antihistamine and prednisolone treatment was obtained in our case similarly to this mechanism.

There are many medical treatments that cause Kounis Syndrome in literature, but we have not found such a case after hirudotherapy implementation. Kounis Syndrome which is one of the life-threatening cause of ACS, should be considered when vital signs, symptoms, and ECG evaluation are performed, especially in patients who were admitted with anaphylaxis clinic.

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#### Conflict of interest

None declared.

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