

# Disseminated Intravascular Coagulation and Death Due to Snake Bites

## *Yılan Isırmasına Bağlı Gelişen Dissemine İntravasküler Koagülasyon ve Ölüm*

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### Abstract

Disseminated intravascular coagulation is a serious and life threatening systemic complication of snake bites that can cause death if the treatment is delayed. Here in we present a 57-year-old female patient with no prior systemic disease who died because of disseminated intravascular coagulation that developed in 6 hours due to a snake bite. (Yoğun Bakım Derg 2012; 1: 17-8)

**Key words:** Snake bite, disseminated intravascular coagulation, death, early therapy

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### Özet

Yaygın intravasküler koagülasyon yılan ısırıklarının hayatı tehdit eden ciddi bir sistemik komplikasyondur ve tedavi geciktirilirse ölüme neden olabilir. Biz burada daha önce herhangi bir sistemik hastalığı olmayan, yılan ısırmasından sonra ilk 6 saat içinde yaygın intravasküler koagülasyon gelişen ve bu sebeple yaşamını yitiren 57 yaşında bir bayan hastayı sunuyoruz. (Yoğun Bakım Derg 2012; 1: 17-8)

**Anahtar sözcükler:** Yılan ısırması, yaygın intravasküler koagülasyon, ölüm, erken tedavi

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### Introduction

Worldwide deaths due to snake bites are a common occurrence. The majority of such deaths occur in countries close to the equatorial belt (1, 2). Approximately 10% of the 3500 known species of snakes are poisonous (2). Of the 54 snake species in Turkey, 1 is poisonous, 3 are semi-poisonous, and the remaining 50 are non-poisonous. The venom of some poisonous snakes is not very toxic (3). Due to the climate and geography, most snake bites in Turkey occur in the southern and southeastern Anatolian regions. Venomous snakes in those areas are mainly adders of the family Viperidae (4). The occurrence of local and systemic snake bite-related symptoms is directly related to the toxicity of the venom. Edema, ecchymosis, hematoma, and gangrenous lesions may occur as local symptoms, whereas systemic symptoms may include fever, nausea, vomiting, delirium, jaundice, circulatory collapse, convulsions, and coma. Death from secondary infections, neurotoxicity, disseminated intravascular coagulation (DIC), intracranial hemorrhage, and acute renal failure may occur 6-48 h after being bitten (5, 6). To reduce the possibility of morbidity and mortality it is critical that antiserum be administered at the appropriate dose as soon as possible following a snake bite (7).

### Case Report

A 57-year-old female presented to our hospital in a generally impaired condition following a snake bite and fainting. She had been

bitten by a snake while working in a field 1-2 hours (h) prior to presentation, and had been brought to the emergency department after her condition deteriorated. The species of snake could not be established. The patient was unconscious during the physical examination; her Glasgow Coma Scale score was 3-4, temperature was 37.6°C, arterial blood pressure was 70/40 mmHg, and pulse was 84. Two teeth marks, apparently from the snake bite, were observed midline on the right tibia. Complete blood count findings were as follows: WBC: 16.4 (x10); HCT: 27 (%); Hgb: 9.6 (g/dL); PLT: <20.000 (K-ul) (test repeated); activated partial thromboplastin time (aPTT): very high (20-40 sec); prothrombin time (PT): not measurable because the result was over 100 (11-15 sec); d dimer and fibrinogen could not be scored. Other values were:- glucose: 224 (mg/dL) (70-110); blood urea nitrogen (BUN): 43 (mg/dL) (15-45); albumin: 2.5 (g/dL) (3.8-5.1); creatinine: 0.87 (mg/dL) (0.5-1); aspartate transaminase (AST): 55.3 (U/L) (0-42); alanine amino transferase (ALT): 37.9 (U/L) (0-37); bilirubin (total, direct): 0.4 (mg/dL) (0.1-1.1); sodium (Na): 147 (mmol/L) (135-145); potassium (K): 3.1 (mmol/L) (3.5-5.5); chlorine: 112 (mmol/L) (96-111); protein: 4.21 (g/dL) (6.3-8.3).

As her blood pressure was 70/40 mmHg, we administered 0.9% NaCl and colloid support. A central venous catheter was not inserted. The presented patient's lungs sounded slightly rough and there was no suggestion of pulmonary edema based on direct radiography. Due to the patient's age, EKG was performed to rule out any heart problems and the findings were normal.

The patient was intubated and antiserum was administered. The antiserum was Europe viperidae venom antiserum. The antiserum was used about two-three hours after snakebite. The antiserum contained viperidae ammodytes venom, viperidae aspis venom, viperidea berus venom, viperidea lebetina, viperidea xanthina venom and viperidea ursinii venom. The patient was hemodynamically stabilized with fluid support. A urinary catheter was inserted into the patient in the emergency department; however, she produced no urine.

Because conditions in the intensive care unit and hospital in general were insufficient, the patient was approved for transfer to a hospital with tertiary level intensive care, which was approximately 3.5 h away. However, the patient died while being admitted to the other hospital's intensive care unit despite all efforts to revive her.

## Discussion

Serious complications can develop as a result of snake bites due to the enzymes, proteins, and inorganic components of the venom. Local induration, ecchymosis, and hematoma may also occur, however, in the presented case, only puncture marks and slight bruising were observed at the bite site. Enzymes in snake venom, such as serine protease and arginine ester hydrolase, may lead to the development of DIC via activation of the clotting system. As a result, prolongation of PT and aPTT, low-level fibrinogen, an increase in the level of fibrin degradation products, and low-level protein C can be observed via coagulation testing. These hematologic disorders, which are usually mild, can in rare cases lead to fatal complications, such as intracranial, pulmonary, and intra-abdominal bleeding.

The thrombocytopenia and the results of PT and aPTT in the presented case was indicative of severe hematologic damage and DIC, as the PT and aPTT values in the presented case were very high.

Snake bites can cause acute tubular necrosis (ATN) related to renal damage. Cortical necrosis has also been described in severe poisonings (8, 9). A urinary catheter was inserted into the bladder of our case but she produced no urine.

Pulmonary edema may occasionally occur in cases of snake bite due to acute respiratory distress syndrome (ARDS) (10). Our patient's lungs sounded slightly rough and there was no suggestion of pulmonary edema based on direct radiography.

In the majority of snake bite cases administration of a sufficient dose of the appropriate antiserum will prevent the development of life-

threatening complications (11). In the presented case, serious systemic complications had already developed by the time she presented to the emergency department but there were no local complications. Despite the potential for some side effects, the primary treatment for snake bites is early administration of antiserum and support. In southern and southeastern Turkey poisonous snakes are common, and snake bites occur frequently, therefore, we consider that regional emergency departments must stock the necessary antiserum, and rapid transfer of patients must be ensured via the establishment of central and advanced intensive care units in all relevant provinces.

## Conflict of Interest

No conflict of interest was declared by the authors.

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