

Fatal Poppy Capsule Toxicity

Hudaverdi Küçüker¹ Fatma Aydın²

¹Sakarya University, School of Medicine, Department of Forensic Medicine, Sakarya, Turkey

²State Hospital, Afyonkarahisar, Department of Pathology, Afyonkarahisar, Turkey

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ABSTRACT

A 65 -year- old woman, with a history of a dry cough and general body pain of 3 to 4 days duration. By virtue of the antitussive and analgesic effects, she broke the shells of approximately 10-15 poppy capsule, boiled them and drank the solution one morning after breakfast. 6 to 8 hours later, family members hospitalize her, having finding that she is still in bed in a bad condition. She dies 2 to 3 hours after admitting the hospital. At the autopsy, no evidence of trauma was found macroscopically. Pathologic examination revealed areas of swelling in the lungs, hyperemia and congestion in the brain and internal organs. Toxicological investigation of body fluids revealed morphine in the urine and bile samples. The morphine level was found to be 878 ng/mL (toxic dose: 364 ng/mL) in the blood samples. Prevention programs should focus on is required across all age groups.

Key words: Poppy capsule toxicity, fatal poisoning, morphine intoxication

Ölümcül Haşhaş Kapsülü Zehirlenmesi

65 yaşında kadın 3-4 gündür devam eden kuru öksürük ve genel vücut ağrıları hikayesi vardır. Yaklaşık 10-15 adet haşhaş kozalağını, öksürük ve ağrı kesici özelliği nedeniyle, kabuklarını kırarak suda kaynatmış ve sabah saatlerinde kahvaltıdan sonra içmiştir. 6-8 saat sonra hala yataktan kalkmadığını gören aile fertleri durumunun kötü olduğunu görmüşler ve hastaneye götürmüşlerdir. Hastaneye gelişinden 2-3 saat sonra hasta ölmüştür. Otopside makroskopik olarak travma bulgusu olmadığı, patolojik incelemede akciğerlerde şişme alanları, beyin ve iç organlarda hiperemi-konjesyon bulunduğu belirlenmiştir. Vücut sıvılarından alınan örneklerde yapılan toksikolojik incelemelerde idrar ve safra sıvısında da morfin bulunduğu, morfinin kandaki miktarının 878 ng/mL (toksik doz 364 ng/mL) olduğu belirlenmiştir. Tüm yaş gruplarına haşhaş kapsülünün kullanımının önlenmesi ile için program yapılması gereklidir

Anahtar kelimeler: Haşhaş kapsülü zehirlenmesi, ölümcül zehirlenme, morfin zehirlenmesi.

Correspondence: Hudaverdi Kucuker MD, Associate Professor in Forensic Medicine, Sakarya University School of Medicine, Department of Forensic Medicine, Sakarya, Turkey.

Tel: 902642956630, Fax: 902642956629

E-mail: drhkucuker@yahoo.com

INTRODUCTION

The poppy plant (*Papaver somniferum*), which is also produced in Anatolia, is one of the plants, that have narcotic and antitussive effects known for thousands of years. It is most produced in the Afyonkarahisar province and environs of our country. The name of this province comes from this plant ("Afyon"= opium) and the "Karahisar" castle that has a history extending to the Hittites. The world's fourth largest alkaloid producing factory is also found in this city. In this region, the poppy plant is consumed as food in varying forms such as fresh green herbs and oily seeds that are found inside the poppy capsule. The narcotic drug 'Opium' is extracted from the fresh capsule of the poppy plant. The shells of dried capsules are only processed in the alkaloid factory. About 20 types of alkaloids are manufactured in this way. These are opium derivatives such as morphine, codeine, noscapine, papaverine. Strict legal rules are applied for the cultivation of this plant. Cutting of green cones of the plant in order to extract opium chewing gum is accused with drug trafficking and is sentenced with heavy prison. Dried poppy capsules of the plant can be found at homes. Local people, produce a special paste from the seeds found in the capsule which they consume as food. Boiling the dried poppy capsules owing to the antitussive effects, is seen at times but this is performed in very small doses so that a toxic level inducing poisoning has not been reported so far. Fatal poppy capsules toxicity similar to this case has not been found in the literature. The case we describe below is about a fatal toxicity due to oral intake of a concentrated solution, prepared by boiling a large number of poppy capsules which are known for their antitussive and analgesic effects.

CASE

The case is a 65 year old married woman. It was declared that, having a dry cough for 3-4 days duration, one morning after breakfast, she broke the shells of approximately 10-15 poppy capsules (exact quantity is unknown), emptied the seeds, crushed the shells and boiled them. After drinking the solution (for prevent the coughing), she went to bed for a rest. Her husband and children went to their shop after breakfast, returned home 6-8 hours later and found her in an unconscious state. They immediately transported her to the nearest district hospital where she was transferred to the intensive care unit of Afyonkarahisar State Hospital.

According to the documents of the State Hospital; she was in a state of syncope with fixed miotic pupils, negative light reflex and unresponsive to any painful stimuli at admission. A symptomatic treatment was started, ventilator connected and 2 mg dose of naloxone was injected but the patient died. She was unresponsive to 45 minutes of CPR and inotropic medical treatment. At autopsy, the woman corpse was 165 cm tall, weighing 85 kg and displayed no traumatic lesion in the external examination. Macroscopic examination revealed congestion and spotty hemorrhage on the surface and cross-sections of the brain, (Figure 1A), light yellow coloured appearance in the liver and a hydropic gall bladder with a dimension of 10x5x5 cm. The histopathological findings with a light microscopic examination of the liver, kidneys, lung and myocardium are given below. Liver: An acute hepatitis appearance, characterized with diffuse centrilobular and mid-zonal necrosis was seen. Areas of necrosis displayed a dense inflammatory infiltration of polymorphonuclear leukocytes and ce-roid containing Kupffer cells with congestion. The portal triads were minimally affected with a mild degree of mixed inflammatory infiltration (Figure 1B). Kidney: Foci of acute tubular necrosis were found extensively. Glomerulosclerosis was seen focally. Edema, congestion and a mixed inflammatory infiltration was observed in the interstitium (Figure 1C). Lung and myocardium: Moderate alveolar edema, marked acute emphysema, severe hemorrhage and congestion was observed. Myocardium, brain and the cerebellum displayed diffuse edema and congestion. Toxicological analyses of body fluids demonstrated morphine in urine and bile samples. The blood level of morphine was found to be 878 ng/ml. All of these findings in this case point out that the cause of death was opioid (morphine) poisoning.

DISCUSSION

According to the information obtained from the alkaloid factory; the average weight of a single, dried poppy capsule that is produced in this region ranges between 4-8 gm. A single dried poppy cone contains approximately 0.4-0.5% gr morphine as well as the other alkaloids. Satisfactory analgesia in cancer patients is associated with a very broad range of steady state concentration of morphine in plasma (16 to 364 ng/ml) (1). This case is blood level of morphine was found to be 878 ng/ml.

The histopathological changes in death cases related

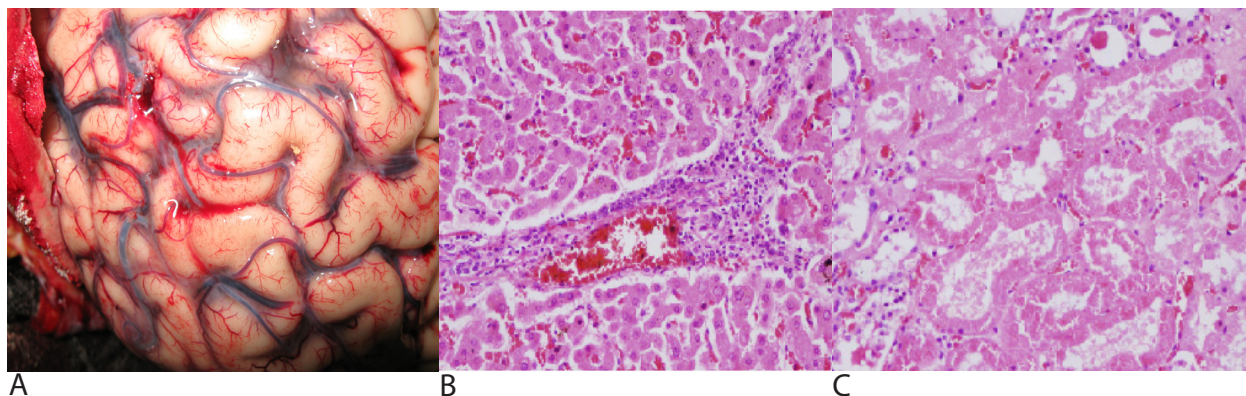


Figure 1. A; Brain: congestion and spotty hemorrhage on the surface. H&E, x200, B; Liver: Diffuse centrilobular necrosis and congestion. H&E, x200, C; Kidney: Acute tubular necrosis, edema, congestion. H&E, x200

to high dose opioid ingestion have been investigated and findings point out necrosis in the liver especially beginning in the centrilobular region and reaching the mid-zone after approximately 18 hrs. The myocardium showed cytoplasmic eosinophilic changes diffusely from 2.5 hrs. The lung displayed marked acute emphysema, severe hemorrhages and a slight to moderate alveolar edema (2-5). Similar findings were also observed in this case. Opioid drugs are safe and effective when consumed for medical purposes in the superintendence of experts (6). Nevertheless, over the past decade, fatal opioid overdose has emerged as a major public health issue internationally (7). The major cause of deaths related to opioid overdose has shown to be inadvertence (8). The case we present has showed that careless and unaware consumption of poppy capsule is a great danger often resulting with mortality. A similar manner of use has been observed in children. When used in children especially under 5 years age, respiratory depression, bradypnea and coma resulting with death has been reported (9,10). If opioid poisoning is not considered in children with these symptoms, cause of death may not be determined or an incorrect diagnosis maybe given in cases without an autopsy. Therefore, healthcare professionals working in regions of opium production, must be warned and people should be educated about misuse.

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