

CO Poisoning without Obvious Source: a Case Report

Kaynağı Belli Olmayan CO Zehirlenmesi: Bir Olgu Raporu

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Abstract

Carbon monoxide (CO) poisoning is responsible for a great number of unintentional deaths all over the world. The diagnosis is very difficult due to its various symptoms that mimic numerous illnesses. Misdiagnosis can lead to cell death and cognitive deficits which are irreversible. Therefore, knowing the situations in which CO poisoning occurs is of great importance in clinical suspicion and evaluation. The most common ones are listed by the Centers for disease control and prevention of the United States. Although this is very helpful; we encountered some patients affected in bathrooms without any nearby source of CO production. It reflects the need for re-assessment of the other ways that CO can be transmitted. Also physicians should be alert to consider possible CO poisoning in any patient whose symptoms began after taking a bath, not only the ones near the water-heater.

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Key words: CO toxicity, bathroom, misdiagnosis

Özet

Karbon monoksit (CO) zehirlenmesi dünyanın her yerinde çok sayıda kasıtsız ölümden sorumludur. Birçok hastalığı taklit eden çeşitli semptomları nedeniyle tanısı çok zordur. Yanlış tanı hücre ölümüne ve geri dönüşsüz kognitif bozukluklara yol açabilir. Bu nedenle, CO zehirlenmesinin görüldüğü durumları bilmek, klinik şüphe ve değerlendirme için büyük bir önem taşır. En sık görülen durumlar Birleşik Devletler Hastalık Kontrol ve Önleme Merkezlerince (CDC) listelenmiştir. Bu son derece faydalı olmakla birlikte, biz yakınlarında bir CO üretim kaynağı olmayan banyolarda zehirlenmiş bazı hastalarla karşılaştık. Bu durum, CO'ın bulaşabileceği diğer yolların yeniden gözden geçirilmesi gerektiğini göstermektedir. Doktorlar da sadece su-ısıtıcı yakınında olan bir kişide değil, semptomları bir banyo sonrası ortaya çıkan bir hastada olası bir CO zehirlenmesini göz önünde bulundurmalıdır.

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Anahtar kelimeler: CO zehirlenmesi, banyo, yanlış tanı

Introduction

Carbon monoxide (CO) poisoning is the second cause of unintentional poisoning deaths and is responsible for more than 500 mortalities in the United States per year (1). The mortality from CO rises in developing countries like Iran because of using natural gas as a source of energy and lack of control and standards in heaters. In the last five years there were at least 800 mortalities per year because of CO poisoning and this is only the tip of the iceberg (2). It is important to remember that the total rate of deaths caused by CO exposure is much higher than this around the world. The most common symptoms of CO poisoning in lower concentrations are a varied flu like syndrome (headache, dizziness, weakness, nausea, vomiting, chest pain, and confusion). High levels of CO inhalation lead to unconsciousness and death (3, 4). Unless suspected, CO poisoning is very difficult to diagnose because the symptoms mimic other illnesses (5). Here we report 4 cases of CO poisoning that were misdiagnosed initially because there was no suspicion of

CO exposure in their histories due to their environmental circumstances.

Case Reports

Case 1: A 30 year old man had complaints of nausea, vomiting and headache. The patient mentioned a history of previous headaches but it had worsened this time so that medical treatment was needed. He had no proven diseases and did not take get any pharmaceutical drugs. There was no history of smoking or opium consumption. He was conscious and oriented to time and place and complained of weakness in his extremities. There was a heart rate (HR) of 120/min (beats per minute), respiratory rate (RR) of 32/min (breaths per minute) and blood pressure (BP) of 130/90 mmHg. No neck-stiffness was present and there was no reduction in muscle force. The blood sugar (BS) was 107 mg/dL. The patient was admitted with a primary diagnosis of migraine headache and a brain CT scan was performed because of the worsened headache that showed no positive findings.

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Case 2: An 18 year old man was found in the bathroom with a decreased level of consciousness. The patient had a convulsion episode while being carried by EMS to the hospital. There was no history of pharmaceutical therapy or previous diseases or even substance use. He was transferred into the CPR room due to his low level of consciousness and intubation was performed. Breathing was spontaneous and he was in a stupor state. The pupils were pinpointed and the vital signs were as follows: HR: 130/min, RR: 36/min and BP of 110/90 mmHg. BS was 97 mg/dL and there was no reaction to naloxane injection. There were no other positive findings in the other examinations, laboratory data or even in the brain CT scan.

Case 3: A 20 year old woman was brought to the emergency department because of agitation, severe anxiety and hallucination. She had a homicidal hallucination but there was no past history of psychological or neurologic disorders. The only drug she used was oral contraceptive pills. In the physical examination she was confused and agitated, there was a HR: 133/min, RR: 28/min, BP: 90/70 mmHg and the pupils were reactive but no other positive signs were detected. Because of a suspicion of brain vein thrombosis; a brain CT scan was conducted which revealed no pathologic changes. Neurologists ordered a lumbar puncture (LP) and magnetic resonance imaging (MRI). LP parameters were normal except for a RBC count of 5-6/hpf (high power field). The only other positive finding was a leucocytosis of 12300/mm³.

Case 4: An 88 year old woman in a comatose state and vomiting was intubated in CPR room due to her unconsciousness. There were findings of HR: 100, RR: 22, BP: 170/110 with mydriatic but reactive pupils. Jugular vein pressure was normal and no neck-stiffness was detected. A 3/6 systolic murmur in the heart and fine rales in the base of lungs were heard. The extremities were warm, the pulses were symmetric and no swelling was detected. Signs of heart ischemia were found in the electrocardiogram. Because of the suspicion of intracranial hemorrhage, a brain CT scan was done which showed only mild brain edema.

Interestingly; all these patients showed their symptoms after taking a shower. Since we were studying on CO poisoning and its different symptoms, we checked carboxyhemoglobin levels in these cases. Surprisingly; it was 6.5% in the first, 21.5% in the second and higher than 30% in the last two patients. carboxyhemoglobin levels were checked after at least 1 hour post exposure because of the initial misdiagnosis, and carboxyhemoglobin level is a prognostic factor for CO poisoning, although its use is controversial (6).

The important point was that all these cases took long shower in bathrooms without a local water heater. In the first three cases a water-heater was situated in the kitchen and in the last case the water-heater was in the basement. Since there was no other reason for CO exposure; it seems that CO has been carried by water that comes out of the water-heater which produces CO by some means. It must be emphasized that neither hyperbaric oxygen nor any other therapy can prevent cognitive deficits due to cell death during the poisoning (7).

All together; it seems that CO poisoning should be considered in any patient whose complaints began after taking a bath, even though, there is no sufficient reason for CO contamination. The diagnosis is difficult because of the various symptoms caused by CO (8). On other hand, more should be done to standardize the heaters.

Conflict of Interest

No conflict of interest was declared by the authors.

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