A STUDY OF RARE FORM OF CARBON MONOXIDE POISONING IN WATER PIPE

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ABSTRACT

Water pipe is a traditional tool for smoking that is specific to the Balkan states, Middle East and South Asia. Recently, its use has increased globally among young individuals and particularly among women. Compared to cigarettes, there’s a higher exposure to smoke, carbon monoxide (CO) and heavy metals for water pipe. In this report, we describe a case of syncope resulting from carbon monoxide intoxication associated with the use of water pipe. Thus, we underlined the necessity of considering CO intoxication secondary to water pipe use in the differential diagnosis of patients presenting with the symptoms of syncope and unexplained neurological symptoms.

Keywords: water pipe, carbon monoxide intoxication, syncope.

Introduction

If not diagnosed early and treated, cases of carbon monoxide intoxication may result in fatal outcomes. It is one of the fatal forms of poisoning particularly in children and young people. The conditions that could lead to CO intoxication include exhaust gas, coal burning stoves, water heaters, portable generators and smoking. The non-specific nature of the initial symptoms results in a delay of diagnosis (1). In this report we mention a case of intoxication secondary to water pipe use, which is an unexpected condition for CO poisoning.

Water pipe, also called nargileh, goza, hookah, are referred to under different names depending on the location. It was first used in India followed by use as a traditional tool of smoking specific to Balkan states, Middle East and South Asia (1). Water pipe, a mechanism that enables the individual to breathe in the smoke filtered through the water by a hose (Figure 1), has become a cultural component in the East region (2). Recently, its use has increased globally among young individuals and particularly among women. Water pipe use is common among young people in coffee shops as a social activity in Turkey. Compared to cigarettes, there’s a higher exposure to smoke, carbon monoxide (CO) and heavy metals for water pipe. A single water pipe session corresponds to 100 cigarettes (2, 3). The peak carboxyhemoglobin concentrations are higher in water pipe users compared to smokers. However nicotine concentrations are similar between smoking and water pipe use. As the intensity of smoking increases, the CO concentration also increases proportionally (2).

In this report, we describe a patient presenting to our emergency with syncope resulting from carbon monoxide intoxication associated with the use of water pipe.

Case

A 21-year-old female patient presented to our emergency with deterioration of overall status and blurred consciousness. Bases on the anamnesis obtained from her friends, we learnt that she was a university student with frequent water pipe use in the social environment. Before she was brought to the hospital, she had been smoking water pipe continuously for 2 hours and suddenly had an onset of the complaints of headache, dizziness and fatigue. Upon loss of consciousness and fainting, she was brought to the emergency by her friends.

At presentation, she was mentally confused and non-cooperating. The Glasgow coma scale was detected to be 12. Her vital signs were stable with a blood pressure of 110/ 80 mmHg, a pulse of 94/min, body temperature of 36.5 degrees, a respiratory rate of 18/min and blood oxygen
saturation with finger pulse oximeter of 96%. The capillary glucose level was 90 mg/dl. No findings of dehydration were detected. There were no abnormal neurological examination findings other than confusion. Pathological reflexes were negative. Of the laboratory examinations, whole blood count, electrolytes, blood urea nitrogen, creatinine, cardiac enzymes and troponin levels were found normal. Blood gas analysis showed pH 7.40, bicarbonate 22.5 mmol / L, base deficit 22, lactate 2.4 mmol / L and 26% CO-Hb. Electrocardiogram was normal with no arrhythmia or ischemia. Cranial CT detected no pathological findings. His medical history involved no alcohol or drug use. Treatment was initiated with oxygen application via green mask. The patient became conscious following oxygen treatment. Upon persistence of the neurologic symptoms at the 4th hour of follow-up, the patient was administered hyperbaric oxygen treatment. Following treatment, the symptoms completely disappeared. The CO-Hb level returned back to normal. The patient was discharged with recovery.

Discussion

Water pipe use is traditionally common in the Balkan States, Middle East and South Asia (1). Recently, the use of water pipe has become more common, particularly among young individuals. A recent trial showed that it is considered as a social activity among the Mediterranean university students. Water pipe smoking was detected to be higher among male university students in Syria and Jordan (62.6% and 61.9%, respectively). This rate is higher in female students in Israel (37.7%) with higher rates also reported for Jewish (39.5%) and Arabic people (30.5%). In France and other European countries, an increase in water pipe use has been observed (2). Many young people believe that water pipe smoking is less harmful than smoking. This may be attributed to the more attractive taste and smell of the water pipe. The individual smoking water pipe breathes in more due to the moist smoke and keeps on smoking for longer periods since the smoke is not that irritant (5).

The individuals smoking water pipe are exposed to a higher CO intoxication compared to smokers. The reason for this is the higher volume and duration of smoke exposure at each breath compared to smoking cigarettes. In addition, the CO exposure further increases with the effect of the coal used for lighting the water pipe (2).

In cases of carbon monoxide intoxication, the CO-Hb levels are between 20 and 30%. These cases generally respond well to oxygen treatment and exhibit clinical improvement. Hyperbaric oxygen treatment may rarely be required. This therapy is used in patients with neurologically unstable patients with mental confusion and impaired consciousness (6). In addition, hyperbaric oxygen treatment is effective in preventing the long-term neurologic complications.

In conclusion, suspicion is first required to diagnose in cases of CO intoxication. Together with its recently increasing use, water pipe smoking should be considered and the anamnesis extended accordingly in differential diagnosis in the presence of unexplained confusion or non-specific neurological symptoms particularly in young patients.

REFERENCES

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