Acute Intoxication by Transdermal Opium Application in Infants: Two Case Reports

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ABSTRACT

Background: Acute opium intoxication is one of the most common causes of poisoning in children in Iran. Although most cases are accidental, traditional misuse of opium for symptomatic therapy of various childhood diseases also contributes to high rate of opium intoxication in Iran.

Cases: Here, we report two cases of opium intoxication in infants resulted from transdermal application of opium on burned skin. To our knowledge this is the first case report of intoxication from transdermal misuse of opium.

Conclusion: Health care providers should be aware about signs and symptoms of opium intoxication in children. Opium intoxication should be suspected in each child with history of a recent burn injury that presented with decreased level of consciousness.

Keywords: Burn Injury, Intoxication ,Opium , Transdermal.

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INTRUDUTION

Acute intoxication remains one of the most common medical emergencies encountered in young children in many countries (1-5). According to American Association of Poison Control Centers (AAPCC) 51% of 2.4 million cases of poison exposure reported in 2004 involved children younger than 6 years (6). In only one medical facility of Tehran 1120 cases of poison exposure were reported in patients under 12 years old In 2000 (7).

The majority of cases of childhood poisoning are accidental, mostly resulted from normal curious behavior of young children. Fortunately fatalities are rare. Although intentional poisoning is rare in children they account for the majority of fatalities (1,8).

Most cases of poisoning in pediatric group occur at home. The toxicant is usually either a medicine, illicit drug used by family members, or a house hold products (5,6,7,9). Therefore epidemiological parameters of childhood poisoning vary greatly in different communities depending on potentially poisonous agents used in each community. In Iran opioids are one of the most common causes of childhood poisoning which can be, to some extent, as a result of high rate of opium addiction in Iran (10,11).Yet another factor contributes to the high prevalence of opium intoxication in Iran is the traditional misuse of opium for symptomatic relief in various childhood diseases such as gastroenteritis, otitis media and upper respiratory tract infections (12, 13). The common route of poisoning in these cases is oral (13).

Here, we report two cases of acute opium intoxication in infants after transdermal application of opium by their parents to reduce the pain caused by burn injuries. To our knowledge, to date, no other case of intoxication by transdermal opium has been reported.

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CASE REPORT

CASE I:

An 8-month-old previously healthy breastfed girl was brought into the emergency department by her mother with respiratory distress, cyanosis and decreased consciousness. Her mother mentioned that the patient has had an episode of generalized tonic-colonic seizure before arrival to the hospital. On physical examination the patient had bilateral pin-point pupils unresponsive to light, axillary temperature of 38º C, respiratory rate of 20 /min and coarse crackles in both lungs.

The patient had second-degree burn injury over 10% of her left shoulder, arm and forearm. According to her mother 2 hours before admission the patient suffered from a burn injury to her left upper extremity with hot tea as claimed by parents. The parents then rubbed raw opium on the burned skin to relieve infant's pain. Results of laboratory findings are as followed: WBC:21500 with 44% neutrophils and 51% lymphocytes; Hb:10.5 mg/dl; MCV:79.3 fL; Plt:706000; MCH:24.5; MCHC:30.9; ESR:13 ; BS:449; BUN:10 ;Cr:1 ;Na:138 mEq/L;K:4 mEq/L.

The patient received naloxone for three times followed by naloxone IV drip. Broad spectrum antibiotics were administered as empirical treatment of aspiration pneumonia. Blood, urine and CSF culture were negative. She was discharged 9 days later with good condition.

CASE II:

A 9-month-old previously healthy breastfed boy was brought into the emergency department by his parents with respiratory distress, cyanosis and decreased consciousness. On physical examination his pupils were pinpoint and unresponsive to light. His father mentioned that the preceding day the patient had suffered from a burn injury with boiling water. Afterward opium was used topically to reduce his pain and sedate the baby by his grandmother. The laboratory findings are as follow: WBC:22100 with 64% neutrophils and 33% lymphocytes; Hb:9.4 mg/dl; MCV:72.3 fL; Plt:457000; MCH:21; MCHC:29; ESR:12 ; BS:167; BUN:10 ;Cr:1 ;Na:140 mEq/L;K:4.2 mEq/L. The patient was treated with naloxone and antibiotics and was discharged after 5 days in good condition.

Both patients were admitted to Besat hospital in Hamedan, Iran in 2008 with a 7 month intermission. In both cases the parents denied any knowledge regarding the potentially lethal adverse effects of opium in children.

DISCUSSION

Iran is located in the route of opium shipping from Afghanistan to Europe (11), so easy accessibility of opioids is always a major public health burden in Iran.

Intoxication with opioids is a common and potentially fatal emergency in the field of pediatrics. In some regions of Iran opioids account for up to 50% of poisoning cases and 91% of deaths after poisoning in children (10,13,14). Most cases of opium intoxication are young children, mainly under 5 years, in whom even very small doses of opium can lead to severe toxicity (13,14). Moreover signs of opioid toxicity in children somewhat differ from those of adults (13). The most common symptoms are decreased level of consciousness, respiratory depression and miosis. While in presence of such typical symptoms the diagnosis might seem obvious, these can be easily attributed to the deterioration of the pre-existing illness, then diagnosis of opium intoxication can be missed.

In both cases presented here, intoxication occurred after transdermal application of opium which has not been reported up till now. However there are several reports of intoxication with transdermal application of other opioids in both adults and children (15-18), which resulted in death in some cases. In a 5 year

survey conducted by Parekh et al on 336 cases of poisoning after dermal patches, the only exposure resulting in death was with fentanyl patch in a 4-year-old baby (17). Infants have relatively thin and well perfused skin. Therefore topical drugs should be used cautiously in them. There is a wrong belief among parents that topical application is a "safe" method for drugs application; consequently there is a tendency towards overusing topical agents. When the skin integrity is cut off, the risks are higher. In burn injuries topical drugs can be easily absorbed as a result of activation of a pro-inflammatory cascades and increased vascular permeability. Moreover dehydration resulting from the thermal injury to skin can increase concentration of the absorbed drug causing toxicity.

Like most health issues, the key to reducing opium intoxication in children is public education. Studies indicate that children living in families with addict members are at high risk of opium intoxication. In one study 72.3% of children presented to emergency department with opium intoxication had at least one addict family member (13). Therefore families of opium addicts are an important target group to be given education about hazards of opium intoxication in children.

CONCLUSION

Health care providers should be familiar with signs and symptoms of opium intoxication in children. In a child with history of a recent illness, trauma or burn injury, presented with decreased level of consciousness and respiratory distress, opium intoxication should be suspected and the parents should be questioned about the possible misuse of opium. All three possible routes of application, ingestion, transdermal or inhalation, should be asked. Before discharging the patient, parents or legal guardians should be informed about the potential risks of opium misuse and importance of seeking medical help in childhood diseases rather than using opium for symptomatic relief.

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