A Case Of Opium Intoxication Mimicking Nephrotic Syndrome

H A??n, S Çalkavur, D Özdemir, M Bak

Citation

Abstract
A 4-year old male infant was presented with a two-day history of cough and the swelling of his face and feet followed by abdominal enlargement and difficulty in breathing. The admission diagnosis was nephrotic syndrome according to the initial findings but laboratory findings did not support this diagnosis. The patient's clinical course worsened owing to pulmonary edema which was treated with furosemide. The research towards the aetiology of edema could not come to a conclusion. Afterwards the patient's mother declared she had boiled poppy plant and make him to drink its juice to cause sleep. It is concluded that pulmonary edema caused by increased pulmonary permeability was due to acute crude opium intoxication in the current case. The patient was recovered completely with close observation and supportive treatment in three days without any sequaele.

INTRODUCTION
Edema is defined as an excessive accumulation of interstitiel fluid. Edema formation may be either a localized or generalized phenomenon. Generalized edema can be a manifestation of a primary clinical disorder such as cardiac failure, hepatic cirrhosis or nephrotic syndrome (1). Intoxications are not very frequently taken into consideration in the aetiology of edema.

Opiates are a group of naturally occuring compounds derived from the juice of poppy Papaver somniferum. Opioids have their major effects on the central nervous system (CNS) and gastrointestinal tract, producing analgesia, drowsiness, mood changes, respiratory depression, nausea, vomiting, reduced gastrointestinal motility, and alteration of endocrine and autonomic nerve systems (2). The patient who has overdosed on narcotics classically presents with coma, miosis, and bradycardia. Young children are especially sensitive to the depressive and dysphoric effects of opioids on the CNS (3).

In this article we report a case of opium intoxication in a 4-year old male infant, who presented with generalized edema, respiratory distress and hypertension, considered as nephrotic syndrome.

CASE
A 4-year old male infant was admitted with swelling of the face, hands and feet, abdominal enlargement and difficulty in breathing. The patient was presented with a two day history of cough and besides his parents have noticed the swelling of his face and feet followed by abdominal enlargement and difficulty in breathing. The patient was consigned to our hospital with the diagnosis of nephrotic syndrome.

On admission the patient was conscious with puffy eyelids, abdominal distention and edema of the lower extremities. His body temperature was decreased (36.1ºC, axillary) and blood pressure was 125/87 mmHg (over 95th centile), he had marked tachycardia (140 beats/min) and marked tachypnea (56 times/min). His respiration was regular but medium rales were heard. He had normal neurologic examination. Investigations showed a haemoglobin 11.9 g/dL, leucocyte count of 9.5x10^9/L with 66% neutrophils, 30% lymphocytes and 4% monocytes and 346x10^9/L platelets. Total protein was 5.4 mg/dL with 3.7 mg/dL albumin and 1.7 mg/dL total globulin.

A mild decrease in blood glucose level (53mg/dL) was observed. His plasma creatine, urea and electrolyte concentrations and liver enzymes were within normal limits, initial arterial blood gas analysis was: pH7.33, pCO2:29mmHg, pO2:68mmHg, HCO3:16.7mEq/L. Routine urine examination was normal. The amount of proteinuria was 2.6mg/m^2 per hour and urine output was 2.5ml/kg per hour. The patient's fractional excretion of sodium was less than 1%. Chest roentgenograms showed increased
bronchovascular markings. The admission diagnosis was nephrotic syndrome according to the initial findings but laboratory findings did not support this diagnosis. The possibility of a renal or hepatic disorder was eliminated with the normal plasma concentrations of urea, creatinine, and liver enzymes and with the absence of proteinuria. The electrocardiographic and echocardiographic examinations were found to be normal. The research towards the aetiology of edema could not come to a conclusion. A repeated history taken from the patient’s mother brought out the truth.

The uneducated mother explained that two days ago she had boiled poppy plant and make him to drink its juice in order to calm him down and cause to sleep. The ingested amount was approximately 200mL. We could not able to measure the urinary morphine metabolites but it is concluded that pulmonary edema caused by increased pulmonary permeability was due to acute opium intoxication in the current case. Respiratory failure and CNS depression were not observed; mechanical ventilation was not required but the patient was admitted to Intensive Care Unit (ICU) for close monitoring. The patient was treated with furosemide (2mg/kg/day) because of high blood pressure and pulmonary edema. Naloxone, a pure narcotic antagonist, administration was unnecessary because respiratory and CNS depression did not occur and supportive treatment obtained the recovery. Hypertension was recovered after the administration of furosemide and pulmonary edema was resolved within 24h. The length of stay in the ICU was 32h. The patient was recovered completely in 3 days and he was discharged without any sequelae.

DISCUSSION

Opiates are a group of naturally occurring compounds derived from the juice of the poppy Papaver somniferum. Morphine and heroin are classic opiate derivatives used widely in medicine as analgesics, antitussives and antidiarrheal agents (1). They are absorbed rapidly and completely by the central nervous system; this accounts for the drug’s euphoric and toxic effects. Opioids are well absorbed via all routes except the skin; they are metabolized mainly in the microsomes in the endoplasmic reticulum of the liver (first-pass effect) and also in the CNS, kidneys, lungs and placenta. They undergo conjugation with glucuronic acid, oxidation or N-alkylation. They are excreted primarily in the urine, small amounts are excreted in the feces (2). Opioids have their major effects on the CNS. At least four opiate-specific stereoreceptors are in the CNS (Table 1), as well as cellular actions and other still unknown activities that produce the effects of opioids (3).

**Figure 1**

**Table 1: CNS Opiate Receptors**

<table>
<thead>
<tr>
<th>Receptor</th>
<th>Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mu</td>
<td>Analgesia, Euphoria, Respiratory depression, Misuse</td>
</tr>
<tr>
<td>Kappa</td>
<td>Analgesia, Misuse, Respiratory depression, Sedation</td>
</tr>
<tr>
<td>Sigma</td>
<td>Euphoria, Psychosis</td>
</tr>
<tr>
<td>Delta</td>
<td>Euphoria, Sedation</td>
</tr>
</tbody>
</table>


Opioids produce respiratory depression by a direct effect on the respiratory centers in the brain stem, resulting in decreased sensitivity and responsiveness to increases in carbon dioxide tension. Opium-induced hypoxia is the major problem and is associated with increased permeability of the lung capillaries, pulmonary congestion, edema and haemorrhages (6, 7). Signs and symptoms of opioid intoxication are summarized in Table 2.

**Figure 2**

**Table 2: Opiate Overdose: Symptom Summary**

<table>
<thead>
<tr>
<th>Clinical presentation</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pinpoint pupils</td>
<td>Stimulation of cerebral nucleus</td>
</tr>
<tr>
<td>Coma</td>
<td>Against opioid receptors</td>
</tr>
<tr>
<td>Respiratory depression</td>
<td>Depression of medullary respiratory center of CNS</td>
</tr>
<tr>
<td>Bradycardia</td>
<td>Decrease in sympathetic tone, increase in parasympathetic tone</td>
</tr>
<tr>
<td>Hypothermia</td>
<td>Dilatation of peripheral arterioles and venous blood vessels</td>
</tr>
<tr>
<td>Hypoxemia</td>
<td>External cooling, peripheral induration, CNS depression</td>
</tr>
<tr>
<td>Pulmonary edema</td>
<td>Increase in pulmonary vascular permeability</td>
</tr>
<tr>
<td>Seizures</td>
<td>Euphoretic effects of parent compound and metabolites</td>
</tr>
</tbody>
</table>


Pinpoint pupils are the norm but may not always be present. Hypoxemia, hypoglycemia and postictal conditions may also prevent miosis. Children younger than 2 years of age are especially sensitive to depressive effects of opioids: drowsiness, coma, respiratory insufficiency, bradycardia and seizures. Children also can react with a paradoxical excitement and an itchy face (8, 9). Otto et al. have presented a case of opiate overdose with noncardiogenic pulmonary edema and severe hypothermia (10).

In our patient, respiratory distress and noncardiogenic pulmonary edema with mild hypothermia were observed. Miosis was not present but hypothermia and hypoglycemia,
as the classical symptoms of opiate overdose were also seen. On the contrary of the expected symptoms of opioid intoxication, the presence of hypertension and tachycardia might be due to the generalized edema.

Accidental ingestions and abuse of cough preparations are abundant. Acute ingestion of greater than 1 mg/kg of codeine caused mild-to-moderate symptomatology within 30-60 minutes in 51% of children, and acute ingestion of >5mg/kg caused respiratory arrest in 8 of 234 children (11). The estimated lethal dose for adults is 7 to 14 mg/kg (12). Oral poisoning occurred by crude opium ingestion and the ingested amount was approximately 200mL in our case. Crude opium was supplied by boiling poppy plant and measuring the amount of active compound was impossible.

CONCLUSIONS

In conclusion, we report a case of opium intoxication with atypical presentation and the presented case illustrates that intoxications should be taken into consideration in differential diagnosis of aetiological factors leading to edema. The importance of taking a detailed accurate history is also highlighted in the current case report.

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References
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