



## Case report

## Chemical pneumonitis due to accidental inhalation of benzene: A case report

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## ABSTRACT

Acute accidental inhaled benzene toxicity is rare; however, it associates with the complications including chemical pneumonitis frequently and rarely with the cardiac and neurological complications. The patient should be treated symptomatically since there are no specific clinical practice guidelines especially antidotes established in this regard.

The follow-up and monitoring of the patient are crucial for the remission and also to rule out further complications.

## 1. Introduction

Acute inhalation of benzene occurs rarely and may cause toxicity which further leads to lethal reactions if untreated. Benzene is a colorless, flammable liquid with a sweet odor and it evaporates quickly while exposed to air [1]. It is a component of crude oil, gasoline, and cigarette smoke, etc. There is a chance for occupational exposure since the continuing presence of benzene in the industry as solvent s and glues [2–4]. It can be absorbed in the body through inhalation, ingestion, or skin contact; however, is an important route of exposure [5].

## 2. Case history

A 32-year old car mechanic was brought to the Emergency Department (ER) of King Fahad Specialized hospital after accidental inhalation of benzene. The patient discloses that while attempting to suck out benzene from a car, he got aspirated and developed severe shortness and chest pain. His past medical history was unremarkable, he denied cigarette smoking, and has no history of allergy, anaphylaxis or bronchial asthma. Upon arrival at the (ER), he was connected to the monitor and put on humidified oxygen. On examination, he is severely distressed, PR 120 bpm, BP 120/60, RR 40, T 36.8 °C, Oxygen saturation 96% at room air. Chest examination revealed bilateral polyphonic wheeze more on the right chest, no crackles. Other systems were unremarkable.

Chest X-ray was reported normal., arterial blood gases, complete blood count, biochemistry were unremarkable. The patient was observed in the ER, he received hydrocortisone 100mg intravenous qid, nebulized salbutamol, and budesonide. He showed dramatic improvement, kept observed for 48 hours and discharged on oral prednisolone 20 mg per day for 5 days, montelukast 10 mg od with follow up appointment after one week.

## 3. Discussion

Measurement of benzene in blood [6] and urine [7] are already established in chronic occupational exposure. However, there is no available biological marker to estimate the benzene exposure due to accidental inhalation since both blood and breath benzene levels half-lives seconds to minutes while urinary benzene levels reflect as a marker until the voiding [8]. The patient had neither toxic vomitus may cause severe hemorrhagic inflammation in the lungs [9] nor dizziness may cause death [10]. The other recommended investigation in pulmonary aspiration including chest radiograph [11] was unremarkable and ruling out the aspiration induced lung injury [12] which is further authenticated by the normal arterial blood gas analysis [11]. The patient had no features of progressive aspiration pneumonitis including bronchospasm, frothy sputum, and bilateral patchy infiltrates, even in nondependent lung fields [13] which exclude acute respiratory distress syndrome [12]. On the other hand, the patient had shortness of breath,

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severe chest pain, tachycardia and distress with neither the medical history of lung diseases nor smoking. Thus offers the evidence for the patient having aspiration chemical pneumonitis [14] and there is a chance for rapidly progressing hyper-acute hypoxemia and devastating lung injury [11]. Therefore, symptomatic treatment has been offered to stabilize the patient initially and also to avoid further progression [15]. A double-blind randomized controlled trial suggests neither antidotes nor prophylactic antibiotic is beneficial in the hydrocarbon toxicity [16]; moreover, normal vital signs and complete blood count which further substantiates that antibiotic therapy is not needed in this case. The patient was monitored closely with the vital signs, neurologic status and has no significant abnormality for the first 24 hours.

#### 4. Conclusion

The management of chemical pneumonitis due to accidental inhalation of benzene needs critical care with close monitoring since it may develop lung injury rapidly. However, the clinicians can be considered symptomatic treatment by monitoring the complications cautiously to prevent the further progression towards lung injury.

#### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.rmcr.2019.100981>.

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