

A Rare Case of Acute Lung Injury due to Paraquat Poisoning

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Abstract: Paraquat, a widely used herbicide, is highly toxic with life-threatening effects on the lungs, liver, and kidneys. This case report discusses a 65-year-old male patient who presented with epigastric pain and burning sensation after accidental paraquat inhalation. Initial X-rays showed no active lung parenchymal disease. However, the patient developed acute gastritis, dysphagia, and acute kidney injury with raised WBC counts after ten days. Subsequent imaging revealed bronchial congestion and non-homogeneous opacities. HRCT Thorax showed ground-glass opacities and fibrotic changes. The patient improved with conservative medical management and was discharged with stable vitals. The case highlights the progression and management of paraquat-induced acute lung injury.

Keywords: paraquat poisoning, acute lung injury, HRCT Thorax, conservative management, toxic herbicide

1. Introduction

Paraquat (1, 1'-dimethyl-4, 4'-bipyridylium dichloride) a widely used herbicide, is highly toxic with life threatening effects on the lungs, liver, and kidneys. It is a life-threatening poison with no known antidotes. Early symptoms after paraquat exposure are a burning sensation in the throat, abdominal pain, vomiting, and diarrhea.

Early pathologic findings in the lung include thickening of the alveolar walls by edema, haemorrhage, and inflammatory cells. Some of the alveoli fill with fluid and large amounts of fibrin. The toxic effects of paraquat are thought to result from oxygen radicals that destroy the cell membrane. Organ damage by paraquat depends on the balance between oxygen radicals and tissue levels of oxygen and antioxidants. Organ-specific damage to the lungs is caused by both lower concentration of the antioxidants and higher concentration of oxygen within the lung.

Rose et al. showed that paraquat accumulates within the lung in concentrations 10 to 90 times higher than that in circulating blood.

2. Case Report

This case report discusses a 65-year-old male patient who presented with epigastric pain and burning sensation after accidental paraquat inhalation. Initial X-rays showed no active lung parenchymal disease. However, the patient developed acute gastritis, dysphagia and acute kidney injury with raised WBC counts after ten days. Subsequent imaging revealed bronchial congestion and non-homogeneous opacities. HRCT thorax showed ground-glass opacities and fibrotic changes. The patient improved with conservative medical management and was discharged with stable vitals.

The case highlights the progression and management of paraquat-induced acute lung injury.

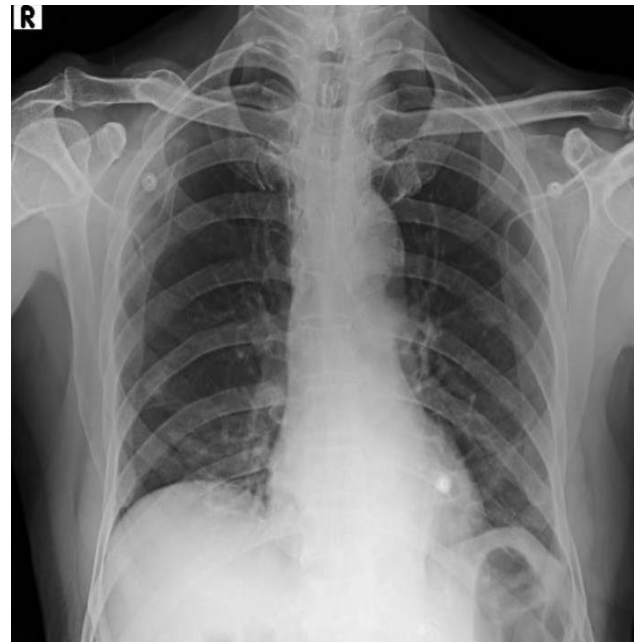


Figure 1

Fig.1 shows: X-Ray taken immediately after accidental exposure to paraquat at the time of initial admission to hospital (20.08.2023).

No active lung parenchymal disease seen.

Patient again presented to the OPD with features of Acute gastritis and dysphagia with features suggestive of AKI and raised WBC counts, on 29.08.2023. During the stay in hospital patient develops difficulty in breathing, maintained saturation on 2 litres of oxygen.

X - Ray Findings:**Figure 2 on (01.09.2023) shows:**

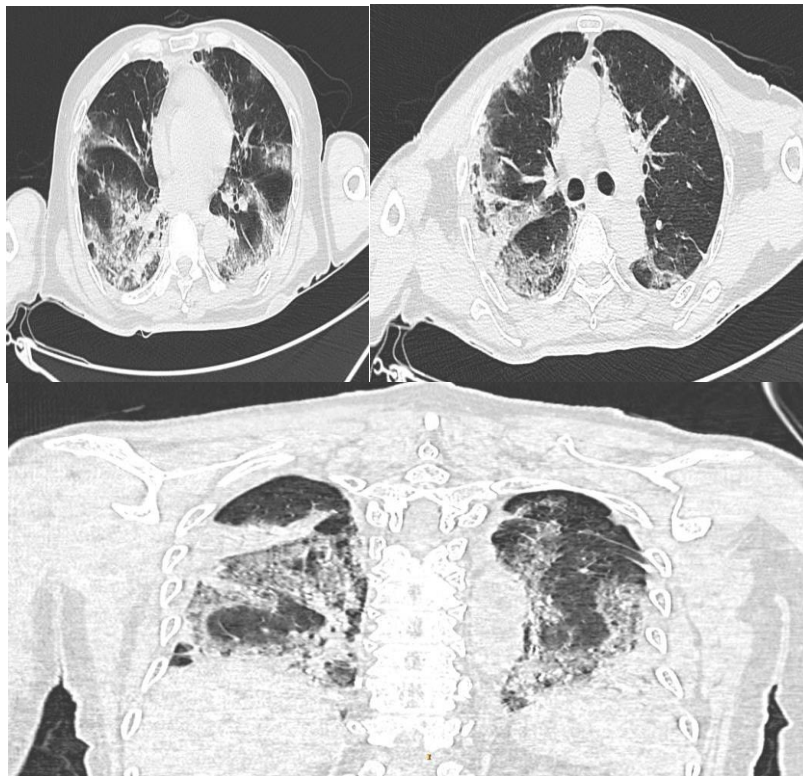
Patient starts developing breathlessness with cough and fever, off and on.

Bronchial congestion seen on both sides of chest.

**Figure 3 On (06.09.2023) shows: -**

Non - homogeneous ill - defined opacities seen in bilateral hilar, Para - hilar and lower zones.

With changes seen in X - Ray chest, HRCT thorax was conducted on 06.09.2023. Patient improved gradually with conservative medical management and discharged from hospital with stable vitals and normal blood parameters.

HRCT Thorax Findings

Ground glass opacities are seen involving bilateral lung parenchyma in sub - pleural region, predominantly bilateral lower lobes.

Multiple patchy areas of consolidation demonstrating few areas of cystic bronchiectatic changes within, are noted involving the bilateral lung parenchyma; subpleural in location with fibrotic changes in the form of fibrotic strands, bronchiectasis showing few thin-walled cysts within.

Few subcentimeter to centimeter sized pretracheal/ paratracheal and subcarinal lymph nodes are seen.

3. Conclusion

Differentials based on HRCT Thorax include:

- Organizing pneumonia.
- Non - specific Interstitial Pneumonia.

In view of the availability of successive X - Ray chest imaging since the time of accidental paraquat exposure and course during hospitalization, there was absence of any pre - existing lung disease.

With acute paraquat lung injury manifestation seen in 5 - 15 days of initial exposure, the changes seen on X - Ray chest started appearing on Day 11th of initial exposure, and HRCT Thorax was found to be a classical presentation on Day 18th of initial exposure.

It can be concluded that this case was a paraquat induced acute lung injury, which improved symptomatically with medical management.

Treatment given during hospitalization:

- Tab Ciprofloxacin 500mg 1 tab BD
- Tab Acetylcysteine 600mg 1 tab TDS
- Neb. with Budesonide BD
- Tab Montair FX 1 tab HS
- Tab Amlodipine 5 mg 1 tab OD
- Tab Ecosprin AV (75/10) 1 tab HS.

References

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