CASE REPORT

Constipation complication: lung injury following inadvertent intravenous injection of liquid paraffin

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Accepted 4 January 2016

SUMMARY

Liquid paraffin is a highly refined petroleum derivative commonly used medicinally as an oral laxative in Lesotho. We present the case of a 22-year-old Basotho woman admitted under the care of gynaecology in a rural hospital in Lesotho. She was inadvertently administered 10 mL of intravenous liquid paraffin. There were no immediate complications. After 48 h, the patient became unwell with frank haemoptysis and features of systemic inflammation. A chest X-ray demonstrated new bilateral pulmonary infiltrates. She made a full clinical and radiological recovery with a 5-day course of high-dose oral prednisolone and broad-spectrum antibiotics. She was discharged home in a stable condition.

BACKGROUND

Medication errors are, unfortunately, common in developed as well as in developing countries. The ensuing effect on patient care is often serious and may sometimes be life-threatening. This is especially true in settings of reduced medical resources, such as those found in small rural hospitals in the developing world, where such adverse side effects cannot easily be managed.

The primary reported adverse effect of orally administered liquid paraffin is that of lipid pneumonia following aspiration.^{1–4} Naturally, there are limited data on the effect of intravenous administration. However, in the three cases published to date, the most important sequelae were acute respiratory distress syndrome and multiorgan failure.^{5–7}

This case highlights the critical importance of safe prescribing and administration of medications. We present a simple error involving a modest volume of seemingly benign laxative with a potentially hazardous outcome.

CASE PRESENTATION

In a rural hospital in Lesotho, Southern Africa, a 22-year-old Basotho woman was admitted with lower abdominal pain and vaginal discharge. She was suspected to have pelvic inflammatory disease, not an uncommon diagnosis in the region, and was started on intravenous cefotaxime and oral metronidazole as per the local protocol.

On her second day of admission, she reported constipation. Despite being prescribed liquid paraffin to be given orally, the patient inadvertently received the full 10 mL dose by intravenous injection. There were no immediate complaints from

the patient, and the error was not disclosed to other medical staff on the ward.

The following day, the patient reported a new cough with night sweats, and was noted to be tachypnoeic and febrile. This was attributed to her pelvic infection. At this point, the drug error remained unknown. She subsequently developed significant frank haemoptysis. The suspected diagnosis at this point was of pulmonary tuberculosis—a disease endemic to Lesotho. However, sputum analysis was negative for acid-fast bacilli.

By the fourth day, the patient became progressively more tachypnoeic (peaking at 38 breaths/min) and tachycardic at 110 bpm. She remained systemically unwell with on-going haemoptysis.

A plain chest radiograph demonstrated bilateral pulmonary infiltrates (figure 1).

During the following morning drug round, as a duty nurse was preparing a further dose of liquid paraffin, the patient extended her cannulated arm for a medication that she thought was to be injected intravenously. The nurse interrogated the patient, and the medication error became apparent.

INVESTIGATIONS

Our patient was noted to have a significant drop in her haemoglobin, from 9.8 to 7.8 g/dL after 48 h of frank haemoptysis. She was not transfused because of a local scarcity of blood products. Her total white cell count remained stable throughout ($<10 \times 10^9/L$). The platelet count increased from

Figure 1 Plain chest radiograph demonstrating pulmonary infiltrates after intravenous injection of liquid paraffin.

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To cite: Williams SE, Docherty MH. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2015-213685

Figure 2 Plain chest radiograph demonstrating resolution after 5 days of oral prednisolone.

459 to $613 \times 10^9/L$, reflective of possible inflammation and/or bleeding. Owing to a lack of laboratory facilities, it was not possible to perform any additional blood tests.

DIFFERENTIAL DIAGNOSIS

It is not surprising that pulmonary tuberculosis was considered as a plausible initial diagnosis. However, this was supported neither by sputum analysis nor by the radiological findings. On confirmation of the drug error, this differential was dismissed.

TREATMENT

The patient was treated with 5 days of 20 mg prednisolone in view of pulmonary inflammation, and did not require intensive ventilatory support. She continued to receive 1 g intravenous cefotaxime once daily and 400 mg oral metronidazole three times daily started originally for pelvic infection.

OUTCOME AND FOLLOW-UP

The patient made a full clinical and radiological recovery (figure 2). She was discharged home on day 11. She remained well at a follow-up appointment 2 weeks after discharge.

DISCUSSION

The literature contains three case reports of intravenous liquid paraffin administration.^{5–7} Two cases are of attempted suicide,^{5 7} and one, similarly to ours, is of a medication error.⁶ All patients developed acute respiratory distress syndrome, with features of systemic inflammation and sepsis. The volume of liquid paraffin injected varied between patients, ranging from 10 to 50 mL. All patients received high-dose steroids and antibiotics. Two patients required intensive care management and mechanical ventilation.^{5 6} Of note, this did not relate to the total volume of paraffin injected. All patients survived.

Our case is unique in that our patient was treated in a remote environment with access only to basic medical supplies. She made a full clinical and radiological recovery with antibiotics and steroids; a comparatively simple treatment regimen compared to other cases where treatment included mechanical ventilation, plasmapheresis and bronchoalveolar lavage.^{5 6}

We can only comment on the pulmonary manifestations in this case. Our patient did not have any liver or renal function checked owing to lack of facilities on site.

The disease course described here is relatively mild compared to the other published case reports. At the time of the drug error, this patient was already on broad-spectrum antibiotics, which may have conferred protection against a more fulminant septic episode.

Learning points

- ▶ Medication errors can be serious, life-threatening events.
- ▶ Medical staff involved in the care of the patient should be made aware of drug errors at the earliest possible opportunity so as to guide optimal management.
- ▶ High-dose steroids are of use in the treatment of pulmonary manifestations of intravenous liquid paraffin.
- ▶ Significant pulmonary haemorrhage can occur in the context of acute respiratory distress syndrome.

Acknowledgements The author would like to thank Dr Jorge Rodriguez (Chief Medical Officer) and the staff at Maluti Adventist Hospital, Mapoteng, Lesotho. They would also like to thank the patient and her relatives for allowing us to report this case.

Contributors SEW and MHD were involved in the clinical care of the patient, as well as in the literature search and writing of the case report.

Competing interests None declared.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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