ACCIDENTAL PARAFFIN POISONING

P. KOSSICK, M.B., CH.B., D.M.R.D., *Port Elizabeth*

Accidental ingestion of paraffin is the commonest cause of chemical reaction in the lungs of infants and children.[1] Other substances, closely related chemically, which are sometimes accidentally ingested, are: petrol, lighter fuel, insect sprays, cleaning fluids, house paint, turpentine and furniture polish.[2] These products are frequently kept in containers familiar to children, such as milk and cold-drink bottles, cups, jam and condensed-milk tins, usually within easy reach of adventurous and probably hungry children. Paraffin is widely used among the non-White population in South Africa for cooking, lighting and heating purposes, and is comparatively cheap.

Introduction of paraffin into the lungs produces rapid development of a pneumonitis, which may be visible on radiographs within 20 minutes of its introduction, and may persist for several weeks, even when symptoms and signs have disappeared.[2]

Two theories have been advanced for the development of pulmonary signs:

1. Aspiration into the bronchial tree, either at the time of ingestion or during vomiting.

2. Absorption through the gastro-intestinal tract into the circulation, vaporization by body heat and hence entry into the lungs.

This last theory (2) is not now held to be a factor in the development of the lung lesions and the first theory (1) is generally accepted.

Experimental work by Richardson and Pratt-Thomas in 1951,[3] showed that large quantities (calculated to be more than 1 pint in infants) would have to be ingested before death occurred. However, very small quantities (about 1 dram) introduced into the bronchial tree, could lead to severe oedema and haemorrhage, followed by cellular infiltration. Atelectatic changes usually occur, followed by bacterial invasion and consolidation.

The X-ray changes are non-specific and are said to occur in 75% of cases, whereas physical signs are abnormal in only 25%.[4] Typically, the radiographic changes are those of oedema, atelectasis and areas of consolidation. These changes may be segmental, on one or both sides, involving especially the lower lobes, or extending radially from the hila. Uncommonly, pleural effusions, pneumothorax, pneumomediastinum, pneumopericardium or subcutaneous emphysema may occur.[4]

Symptoms usually include coughing, choking and vomiting. Drowsiness frequently occurs and is said to be due to absorption of products closely allied to anaesthetic agents.

PRESENT SERIES

During the period January - December 1959, 61 patients, who had swallowed paraffin accidentally, presented themselves at the Livingstone Hospital Casualty Department, Port Elizabeth, which dealt with 31,268 cases during this same period, making an incidence of just under 0·2%. In comparison, there were in this same period 1 case of caustic-soda poisoning in a child who the previous year had accidentally swallowed paraffin, 1 case of benzine poisoning and 2 cases of children who accidentally swallowed sheep-dip.

Analysis of these 61 cases showed that there were 21 females and 40 males. Their ages varied from 9 months to 19 years, and, excluding a 19-year-old female whose story sounded suspiciously like an attempted suicide, their average age was 21 months.

Signs and Symptoms

Of the 61 patients, 2 were found to be suffering from coincident otitis media, 1 had pulmonary tuberculosis and 1 had a cellulitis of the left leg. These 4 have been excluded from this series. Of the remaining 57 cases, only one-third underwent X-ray examination when first seen, and 60% of these showed non-specific atelectatic and consolidating lesions, mostly in the lower lobes. The rest appeared normal. Those admitted to hospital improved rapidly and were discharged within 3 - 7 days. There were no fatalities.

Symptoms and signs met with in this group of 57 cases were: no symptoms and signs 23, pyrexia 17, vomiting 16, coughing 16, drowsiness 8, rhonchi 7, dyspnoea 6, crepitations 6, frothing at mouth 3, dullness at bases 1, pleural rub 1, and diarrhoea and colic 1 each.

It was not possible to estimate the amount of paraffin ingested and thus correlate this factor with the radiographic findings and the severity of signs and symptoms.

Treatment

All the patients were treated initially in the casualty department and only 10 were admitted to the wards, these being the most severely ill. The rest were given antibiotics and chemotherapy, discharged, and told to return for follow-up at the out-patient department. Gastric lavage was not carried out and it is probably wiser not to do so unless the amount of paraffin ingested is very large, in view of the dangers of aspiration during this procedure. Similarly, induction of vomiting is probably also unwise.[2]

Follow-up

In order to test the efficacy of the treatment given, letters were written to the parents of these patients requesting them to bring their children back for follow-up examination and radiography. Five letters were returned marked 'address unknown'; 1 patient had died, 3 months after drinking the paraffin, from lobar pneumonia complicating measles, but had been fit and well up to her fatal illness; and 5 patients were considered to live too far away for them to make the journey and were excluded from the scheme. Therefore, of the original 57 patients, 46 remained, of whom 30 returned for follow-up.

On X-ray examination of these 30 cases, 2 cases of pulmonary tuberculosis were found which had developed 13 and 10 months respectively since the previous X-rays taken at the time of ingesting paraffin. The other 28 cases were reported to be fit and well and this was confirmed clinically and radiologically.

CONCLUSIONS

It would therefore appear that lasting effects from paraffin ingestion are unlikely to occur and that antibiotic and chemotherapeutic cover as soon as possible, without gastric lavage, constitutes adequate treatment in the great majority of cases.

Hospitalization and intravenous replacement of fluids, oxygen administration and stimulants would seem to be necessary only for those severely ill from pulmonary changes, dehydration as a result of vomiting, and drowsiness and coma as a result of absorption of toxic products.

SUMMARY

1. The findings in 61 cases of accidental paraffin ingestion over a period of 12 months are described.

2. An attempt at a clinical and radiological follow-up after 1 year is described.

3. The symptoms, signs and radiographic changes are indicated.

4. The treatment is briefly discussed.

Thanks are due to Dr. J. Ware, Medical Superintendent, Livingstone Hospital, for permission to publish; to Drs. I. Gordon and G. Comay for access to their case notes; and to Mrs. M. Rogers for secretarial work.

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