

Case Report

Homicidal Insecticide Poisoning in Human Sacrifice Proved on Exhumation

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ABSTRACT

Exhumations are an important, but altogether less frequently used tool in forensic medicine, thought to be more often a procedure that only serves the purpose of clearing the air regarding cause of death in alleged unnatural deaths.

In this case report, we describe a series of five deaths involving children between the ages of 2–3 years, three of whom were exhumed and were linked to homicide by insecticidal poisoning. The motive being the suggestion of a tantric (alleged 'godman') that a childless woman might conceive if ten children between 2–5 years were sacrificed.

Ultimately, exhumation successfully linked the homicide by use of phorate (an organophosphorus insecticide) in two of the five deaths. Exhumation not only proved that the deaths were due to phorate poisoning, but also prevented further deaths of innocent victims by helping to catch the culprit.

Morphological and toxicological findings are also discussed with regard to organophosphorus poisoning in exhumation cases.

Key Words: Exhumation; Homicidal poisoning; Human sacrifice; Phorate; Organophosphorus insecticide

INTRODUCTION

The meaning of the term 'exhumation' is the lawful disinterment or digging out of a buried body from the grave.¹ Legally, interred bodies are burials, which have been ap-

proved by the authorities and which are buried in a cemetery. Unlawful burials on the other hand involve bodies not found buried in a cemetery and are the result of an individual or group trying to conceal or dispose of a body. Exhumations are infrequently done in India because the bodies are disposed of by cremation by most of the communities except a few, leading to burnt ash, which cannot be examined. However, it is done when a dead body is clandestinely buried by a criminal to conceal the crime.

Exhumation is done with some definite objectives² under the order of appropriate authority, which include identification of the dead body, establishing the cause of death, and as a form of second autopsy when the first autopsy report is challenged as being unsatisfactory, or is ambiguous.

Unexplained deaths pose a challenge, particularly when the dead body is buried and subjected to exhumation for determining cause of death. We report a particular scenario, in which three exhumations were conducted involving children who died under mysterious circumstances.

The Cases: Five children succumbed to death in a span of 4 months in a village of about 2000 people, all of a sudden, without any premorbid signs of disease. A sixth child had a lucky survival because of timely medical help. This was rather an unusual event, when the total mortality during that period across the age group was zero, except for these five deaths. All the deceased were male, in the age group of 2–3 years (**Table 1**). Three of the

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deceased children were buried as natural deaths, which were exhumed at a later date, out of which homicidal poisoning by phorate (Thimet) was revealed in two cases, while the cause of death in the third case remained undetermined.

Table 1: Details of Cases with Toxicological Results

Case	Age	Exhumation Interval	Toxicological Result
1	3 yrs	87 days	Phorate (Thimet) - 7.5 mg/100 grams.
2	3 yrs	65 days	Phorate (Thimet) - 8.33 mg/100 grams
3	2 yrs	6 days	Nil
4.	3 yrs	Nil	Nil
5.	2 yrs	Nil	Nil
6.	2 yrs	Survived	Nil

Autopsy Findings: *Cases 1, 2 and 3:* Exhumation and autopsy was conducted in 1st, 2nd and 3rd case after 87 days, 65 days and 6 days after death, respectively. No prior autopsy had been conducted in these bodies. At autopsy, both bodies were found to be relatively well preserved because of adipocere formation, especially in one body (*Case 2*). There were no external injuries. Internally, the hyoid bone and thyroid cartilage were intact in all cases, while the lungs were converted into black amorphous masses. Interestingly, the other viscera, i.e., heart, stomach and intestine were found to have retained their morphological architecture to considerable extent, even 87 days, 65 days and 6 days after death, respectively. Serosal surface of internal organs were reddish pink in colour (**Fig 1**). Stomach contained 100 ml of reddish pultaceous material with distinct smell of organophosphorus insecticide in both *Case 1* and 2 (**Fig 2**). No apparent smell was appreciated in *Case 3*.

At the conclusion of the autopsy, selected viscera were preserved in a saturated solution of common salt and sent to the forensic science laboratory for toxicological examination in both the cases. All the samples were analysed. The report of the toxicological examination confirmed the presence of phorate in *Case 1* and 2, an organophosphorus compound, in the stomach and intestine, while no poison was detected in *Case 3*.



Fig 1: Reddish-pink discolouration of serosal surfaces of internal organs

As per the clinical history, all the cases had manifested pain in the abdomen, vomiting, diarrhoea and frothy secretions. However, assuming that these symptoms could have been caused by natural causes, autopsy was not performed and the children were buried.

Cases 4 and 5: Autopsy was performed by the Medical Officer at the Rural Health Centre immediately after the deaths were reported. There were no external injuries. No abnormal smell was perceived; however there was intense visceral congestion. No poison was detected on toxicological analysis. *Case 4* and 5 also showed similar signs as shown by *Case 1, 2* and 3. However, autopsy was performed because of suspicions raised in *Case 1, 2* and 3.

Based on circumstantial evidence, signs and symptoms before death, autopsy findings and toxicology results, the cause of death in all the cases was opined as due to consumption of phorate (organophosphorus compound). *Case 6* also had the same spectrum of symptoms, but had a lucky survival because of timely medical help.



Fig 2: Pultaceous material in stomach contents

DISCUSSION

Before an exhumation, the question of its possible success usually arises because there is constant apprehension on the part of the autopsy surgeon as to whether presumed morphological or toxicological findings can be detected after certain postmortem period.³ Morphological and toxicological details of the cases in this series are as follows, which may help in similar cases in future.

Morphological Aspects: The cause of death at exhumation has been determined in studies by various authors to range from 66% to 78%.^{3,4} Grellner⁴ observed that the maximum number of buried bodies (n=14, 30%) were disinterred during postmortem intervals ranging from 1-3 months, while it was from 2 weeks to 1 year in a study of exhumations by Kremer.⁵ Artefacts related to toxicological effects may be introduced due to changes in decomposition. Rarely, chromolachryorrhoea (shedding of red or bloody tears) is observed because of a disturbance in porphyrin metabolism and its accumulation in lacrimal glands.⁶ However, whether such reddish colour is also present in other glandular or serosal secretions is not known. Similarly, its presence in postmortem cases has not been documented. In the present case, abnormally reddish pink discolouration was present over serosal surfaces of internal viscera. We believe that a disturbance in the porphyrin metabolism might be responsible for this, though such a hypothesis must be confirmed by further studies.

Toxicological Aspects: Primary suspicion of homicide (n=51) was the most common cause of exhumation, followed by suspicion of poisoning (n=17) in an analytical study of 155 cases of forensic exhumations.⁷ Owing to their easy availability, pesticides have always been extremely popular in India (a country with a predominantly agriculture-based economy) for the purpose of committing suicide.⁸ However, homicidal poisoning involving pesticides has always been rare owing to the disagreeable odour and taste which most of these chemicals possess.⁹ Children have been favoured targets of killing by poisons because of lack of reasoning power and resistance. Paroxon and paraquat have been used as agents for killing children in some reports.¹⁰

The fate of poisons and drugs depends on their chemical stability, and more needs to be known about the effects of putrefaction on toxicological analysis. Findings observed in exhumed bodies should be cautiously inferred as regards the agents which may delay or hasten the

process of putrefaction. Organophosphorus compounds usually resist putrefaction and can be detected in the viscera for quite some time after death.⁶ Sporadic cases have been reported where organophosphorus compounds could be detected in buried bodies at varied intervals (**Table 2**).

In the present case series, detection of phorate (Thimet) in two of the exhumed cases, which is unlikely to have been deliberately consumed by the children, led to further investigations and arrest of a childless married woman, who followed the instructions of a tantric (alleged 'godman') and deliberately sacrificed five children for getting a child of her own. Use of organophosphorus compound for homicidal killing of children makes this case series unusual, and also the fact that homicidal poisoning was established only because of exhumation and subsequent toxicological analysis.

Table 2 Detection of Organophosphorus Compounds in Exhumed Bodies with the Postmortem Interval*

S No	Organophosphorus compound	Postmortem interval
1.	Parathion	17 years
2.	Dichlorvos	45 days
3.	Paraoxon	8 months
4.	Organophosphorus poison (Unspecified)	40, 10 days
5.	Parathion	21 months

*As per studies quoted in the text and cited under references

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