

Organophosphate Detection in a Homicide Victim Burned After Death: Deciding the Cause of Death

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Keywords: Homicide; Suicide; Forensic toxicology; Forensic cause of death

Introduction

Poisonings, whether intentional or unintentional, induced by others or self-induced, always have medicolegal implications. Several difficulties come with the detection of homicidal deaths. Presenting signs and symptoms are often misdiagnosed as natural death or suicide, especially if the crime is committed in a friendly environment [1,2]. Thus, an unknown number of homicides go undetected. In this paper, we report our experience with one case in which there was a homicide committed in association with use of large amounts of organophosphates.

Materials & Methods

The body of a 34-year-old woman was brought for post-mortem examination to Legal Medicine Organization of Iran, Tehran to clarify the cause of death. Forensic examinations were performed under the supervision of forensic medicine specialists. The body was burnt totally and no evidence of violence could be detected. For qualitative analysis, Thin-Layer Chromatography (TLC), High-Performance Liquid Chromatography (HPLC) and Gas Chromatography/Mass Spectrometry (GC/MS) techniques were used to screen and confirm the presence of drugs, poisons and opioid alkaloids in biological samples. Forensic toxicology examinations were done on blood, liver, stomach content and bile by GC/MS, HPLC, spectrophotometry.

Results

Carboxy hemoglobin was not found in victim's blood and burns

injuries were postmortem in nature. No coal pigment was observed in the mucosa of the upper airways at autopsy. Sulfotep, ethion and diazinon organophosphates were detected in stomach content not in liver sample by GC/MS instrumentation. Bile sample was positive for trimipramine and phenobarbital. Postmortem burn and absence of carboxy hemoglobin from victim's blood and unusual evidences in crime scene investigation were favored to put this case in homicidal category. These findings reflect that the victim was already dead at the time of fire. Her husband made a confession to the police soon after her death. He said that during a quarrel with her wife he pressed over her neck and after her death, he poured a gallon of organophosphate pesticide in victim's mouth and had burnt her body.

Conclusion

Homicidal poisoning involving pesticides has always been rare owing to their disagreeable odor and taste. One of the most difficult tasks in forensic medicine is deciding the cause of death in an unclear or debatable case. Most decision-making difficulties arise when there is a definite or potential causal interaction between evidences in crime scene investigation and circumstantial events. Thus, care should be taken when interpreting positive analytical toxicology results.

References

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Received May 17, 2013; **Accepted** May 20, 2013; **Published** May 21, 2013

Citation: Akhgari M, Etemadi-Aleagha A (2013) Organophosphate Detection in a Homicide Victim Burned After Death: Deciding the Cause of Death. *J Clin Toxicol* 3: e116. doi:10.4172/2161-0495.1000e116

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