

Sudden Cardiac Death of a Body Packer Due to Cocaine Cardiotoxicity

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ABSTRACT: This article presents a case of sudden cardiac death due to the effects of cocaine concealed in the body of a male drug smuggler in his 40s, a so-called body packer. A total of 57 body packets filled with cocaine powder were discovered in his body cavities. The detailed autopsy examination, including histopathology and toxicology findings, is discussed with the aim of describing the mechanism of cocaine intoxication in the body packer and an analysis of cocaine-induced cardiotoxicity and sudden death.

KEYWORDS: forensic medicine, cocaine body packer, cocaine cardiotoxicity

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Introduction

Illicit drug trafficking across international borders remains a problem. Very often, drugs are smuggled by body packers who ingest or insert packets of illicit drugs in several body cavities or orifices to conceal them from law enforcement officials as they cross the international borders, and the drugs are subsequently retrieved in the country of arrival. Body packers are also known as mules or drug couriers or carriers. Among different illegally transported drugs, cocaine body packing is very commonly detected in the emergency departments or custody wards.¹ This method of internal concealment of illicit drugs was first reported in 1975.² The first fatal case due to drug overdose while body packing to deceive customs officers was reported in 1977.³ Since then, there have been frequent reports of fatal cocaine overdose among body packers in the medical literature.^{4–6} The term body packer syndrome was first used following an incident in the United States in which 10 people died due to drug intoxication after swallowing body packets.⁷ Internal concealment of cocaine very often poses serious life-threatening conditions among body packers, such as cocaine intoxication due to rupture of the drug packets. In some instances, bowel obstruction by the drug packets has caused near fatalities.⁸ The most alarming consequences of cocaine abuse are the cardiovascular and neuropsychiatric complications. The most common complaint is chest pain secondary to ventricular tachyarrhythmia, myocardial ischemia, and infarction.⁹ In addition to myocardial ischemia, cocaine-induced myocarditis and cardiomyopathy are reported in the literature.¹⁰ The present article reports an uncommon case of

sudden cardiac death of a cocaine body packer due to cocaine cardiotoxicity.

Case Presentation

A male in his 40s was reported dead in a taxi on the way to the airport. The police investigation revealed that the deceased intended to catch an international flight later that day. He complained about chest pain and nausea to the taxi driver. He was pronounced dead after being taken to the nearby hospital. No significant medical history was obtained from his family members except that he was a chronic smoker. Family members were not aware of any drug addiction history of the deceased. When autopsy was conducted on the next day, rigor mortis was found to be present all over the body. No evidence of any injury or intravenous line or scar was found on the body. However, on dissection, 57 white cylindrical body packets were found in the stomach and small and large intestines (Fig. 1). A total of 20 packets were found in the stomach, 10 packets were found in the small intestine, and 27 packets were found in the large intestine. Each body packet contained white matted powder wrapped in aluminum foil, covered by four layers of tubular latex. The packets were over-wrapped by layers of cellophane cover, securely fixed at both ends by paraffin. However, six of the body packs' cellophane wrappings were unraveled (Fig. 1). The heart was 350 g in weight. The left ventricle was mildly hypertrophied and mild atherosclerotic changes were found in the coronary arteries. All organs were congested. Toxicological examination by gas chromatography–mass spectrometry (GC/MS) identified the



white powder as cocaine. A total of 900 g of cocaine powder with 70% purity was distributed in those 57 body packs. Levamisole, lignocaine, and pseudo cocaine were detected as the contaminants in the cocaine powder. Toxicological analysis by GC/MS revealed trace amount of cocaine in femoral venous blood at the concentration of 1.06 mg/L. Further, a GC/MS qualitative analysis of stomach and its content was positive for cocaine and its contaminant lignocaine, whereas the liver and kidney were positive for cocaine along with its contaminants lignocaine and pseudo cocaine. Blood alcohol was not detected in chemical analysis. Microscopic examination of the heart showed hypertrophy of the myocardial cells along with degeneration, fibrosis, and disarray. Patchy mononuclear lymphocytic infiltration with occasional monocytes was found with necrosed myocardial cells (Fig. 2A and B). Vascular congestion in small vessels along with atherosclerotic changes was found in the epicardial blood vessels. The cause of death was considered to be ischemic heart disease secondary to cocaine poisoning.

Discussion

Cocaine is a potent sympathomimetic agent capable of secondary to cocaine-induced increased catecholamine accumulation at the nerve ending. It results in an increased heart rate and myocardial contractility along with systemic vasoconstriction. Thus, cocaine intoxication very often results in systemic hypertension and subsequently myocardial ischemia. Besides myocardial ischemia, cocaine is also known for myocarditis and cardiomyopathy. The exact cause of cocaine-related myocarditis is unknown. It could be due to indirect effect of excess catecholamine-induced contraction band necrosis and inflammatory cell infiltration in the myocardium.¹¹ The presence of eosinophils together with lymphocytes suggests cocaine-induced hypersensitivity myocarditis.¹² However, cocaine is also known for direct cardiotoxicity resulting in myocyte necrosis, which may or may not be associated with inflammatory cells.^{12,13}



Figure 1. Fifty-seven body packs recovered from the gastrointestinal tract. The arrow showing unravelling of the wrap.

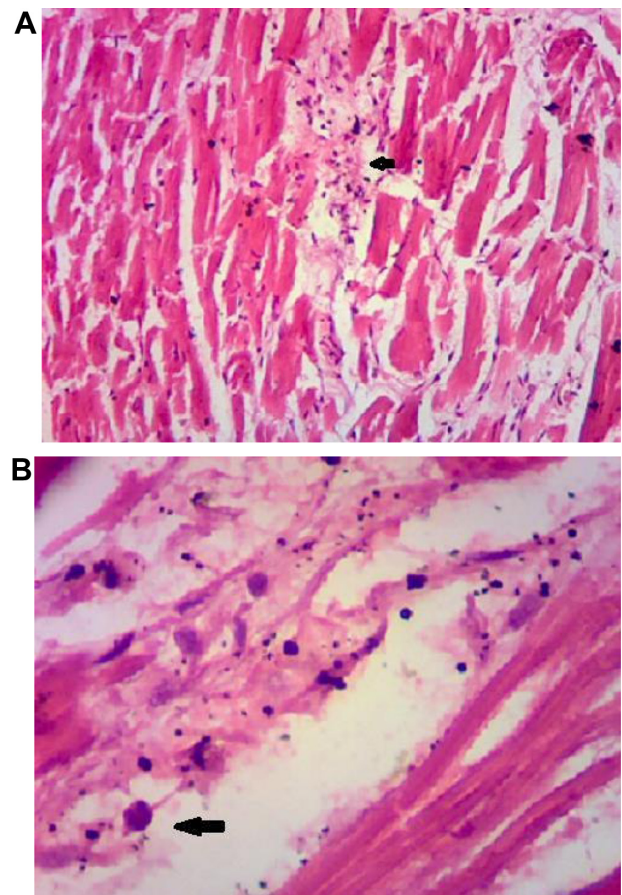


Figure 2. (A) Microscopic view (H&Ex15) showing, myocardial hypertrophy, degeneration, disarray and the arrow showing lymphocytic infiltration. (B) Microscopic view (H&Ex40) Lymphocytic infiltration the arrow showing monocyte.

Cocaine body packers usually experience health complications due to intraluminal rupture of the drug packets or mechanical obstruction of the gastrointestinal tract. However, the general prognosis of the complications of cocaine body packers is considered good following early detection, treatment, and careful monitoring of patients.¹⁴

McCarron and Wood¹⁵ classified cocaine packets into the following three types: type I packets are small productions with thin wrapping and a high chance of rupturing; type II packets have a medium-quality wrapping fixed with a knot with a low chance of rupturing; and type III packets, as found in this present case, have good-quality packing with several layers of latex wrapping fixed with paraffin or wax and have very low chance of rupturing. Later, Pidoto et al.¹⁶ described a type IV packet in which cocaine-filled tubular latex was fixed by colored paraffin or fiberglass. Severe cocaine intoxication, including fatalities among body packers, is usually attributed to rupture of type I or type II packets.⁴⁻⁶ However, complications related to cocaine intoxication are also reported with type III body packets.¹⁴ Poorly packaged pellets may unravel inside the gastrointestinal tract due to mechanical turbulence and chemical digestion. In the present



case, cocaine intoxication could be secondary to leaking from the partially unraveled body packets.¹⁷

Usually chest pain secondary to ventricular tachyarrhythmia, myocardial ischemia, and infarction is a very common presentation in cocaine intoxication. The majority of poisoning cases are due to tachyarrhythmia in the presence of low-to-moderate cocaine concentration. However, this abnormal cardiac rhythm is promoted by one or more underlying anatomical substrates in the heart to cause ischemia and subsequent cardiac arrest.¹⁸ Myocardial hypertrophy and patchy fibrosis and foci of clinically silent lymphocytic myocarditis in the present case in the absence of contraction band necrosis could supply the requisite anatomical substrate for fatal arrhythmia and sudden death.^{18,19} Mild atherosclerosis, myocardial hypertrophy, and the patchy fibrosis of the deceased may have been the result of cocaine abuse that was unknown prior to autopsy. In addition, cocaine-induced myocarditis and cardiomyopathy in the form of necrosis and disarray of myocardial fibers, fibrosis, and the mononuclear cell infiltration also establish the hypothesis of cocaine cardiotoxicity. The presence of occasional monocytes with lymphocytes could be due to direct cardiotoxic effects of cocaine rather than cocaine-induced hypersensitivity reaction where eosinophils were mixed with lymphocytes.^{12,13}

Conclusion

The sudden onset of chest pain or palpitation in any international traveler should be approached with suspicion of body packing. In such cases, the attending doctor must notify the appropriate law enforcement agency even without the consent of the patient. Early intervention and detection of drug body packs in such cases could possibly save a life.

Author Contributions

Wrote the first draft of the manuscript: PP. Contributed to the writing of the manuscript: RKV. Agree with the manuscript

result and conclusion: PP, RKV. Both authors reviewed and approved of the final manuscript.

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