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RESEARCH ARTICLE

A CASE REPORT ON BODY PACKING INVOLVING HEROIN CAPSULES INSERTED RECTAL

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ABSTRACT

Background: Body packing is a frequent technique used to aid the international trade of illicit drugs. When Delhi Police arrested a person, they found 28 cylindrical capsules weighing a total of 292 grams inside their rectum, all of which were knotted with thread. This was reported as an illicit drug material case. **Methods:** There were 66 exhibits, with two different types of colored materials. Of these, 31 had powdery materials with an off-white color and granules, and 35 had semisolid materials with a light brownish color. Thin Layer Chromatography (TLC) and Gas chromatography-mass spectrometric (GC-MS) analysis were utilized to enable simultaneous analysis of illegal chemicals using routine methods in the Forensic Science Laboratory, Delhi. **Results:** The GC-MS report indicated a specific peak at a retention time of approximately and a concentration of 1 mg/ml for the standard drug ISTD. The specific peak observed at retention times of 16.61 and 9.61 for diacetylmorphine and caffeine, respectively, was recorded and considered a positive confirmation of heroin use. The major concentrations of drug components in the off-white powder material for diacetylmorphine and caffeine were observed in the range of 46.3–65.1 mg/ml and 0.008–0.019 mg/ml, respectively. However, the concentrations of diacetylmorphine and caffeine in light brownish-colored pasty material were observed in the range of 20.2–61.4 mg/ml and 0.011–0.036 mg/ml, respectively. The identity of the analyte was confirmed by matching its MS spectrum with that of the derivatized standards. **Conclusions:** We present a case of heroin body-packing. Illegal narcotics can enter the human body through body packing, pushing, and stuffing. The evaluation of the illicit drugs concluded that the off-white powder material had a high concentration of diacetylmorphine and a low concentration of caffeine compared with the light brown powder material.

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INTRODUCTION

Body packing has been recognized as a method of drug smuggling for over four decades. It differs from body stuffing, in which individuals hastily swallow drugs in response to the imminent risk of arrest. In contrast, body packers employ a purposeful approach, either swallowing or embedding drugs in body cavities such as the vagina, intestines, and ears (1, 2). The concealed drugs are wrapped in capsules made of cellophane, layers of latex, condoms, plastic bags, rubber cots, plastic foil, aluminum foil, wax, carbon paper, or self-adhesive tape (3, 4). Body packers usually carry approximately 1 kg of drug, divided into 50–100 packets of 8–10 g each, although drug smugglers carrying up to 500 packets have been reported (5, 6). Despite the increase in quality of packaging procedures and the consequent decrease in mortality among body packers, packet rupture and consequent toxicity remain the most important life-threatening complications (7). Nevertheless, packet failure may still cause poisoning in the country of origin, during the journey, or at their destination, as in the cases presented here. However, clinicians and forensic pathologists may discover concealed drug packages through medical examination or autopsy of cases with an unknown cause of death (8). This paper aims to describe the forensic examination and toxicological analysis carried out on both types of drug packages that arise in cases of suspected or ascertained body packers.

Case history: A person was admitted to the hospital, where the doctor handed over 28 cylindrical capsules that were found tied with a thread containing white powder, and stated that the same had come out through the stool of the patient. After checking through the drug detection kit, the suspect material was found to be a drug. After weighing, the material was found 292 grams. All sample materials were packed with the doctor's seal and handed over to the investigation officer. The sealed parcels were deposited at the Forensic Science Laboratory, Delhi, India, for further examination.

MATERIALS AND METHODS

There were 66 exhibits in all, with two different types of colored materials. Of these, 31 had powdery materials with an off-white color and granules, and 35 had semisolid materials with a light brownish color (Figure 1). All chemicals and reagents were of analytical grade.

Sample preparation: To recover the suspected drug analyte from the sample, extract the analyte using a suitable extraction technique. In this study, the liquid–liquid extraction method was employed (9). The macerated material was then treated with 10 ml of glacial acetic acid and 10 g of anhydrous sodium sulfate. The mixture was then incubated in a water bath at 60°C for 3–4 h. The content was then allowed to cool before being filtered using filter paper. The extracted filtrate was used to extract the suspected drugs. The extraction was divided into two fractions: acidic and basic.

Acidic Extraction: The obtained filtrate and 50 ml of diethyl ether were added to the separating funnel and shaken vigorously for 12–15 min. The organic or ether layer was isolated, and the same process was repeated two more times to recover the maximum amount of analyte. All three ether layers were combined and allowed to pass through a funnel of anhydrous sodium sulfate before being evaporated to dryness. The evaporated residue was used in the TLC and GC-MS studies (9).

Basic Extraction: The aqueous acidic layer procured after acidic extraction was first prepared alkaline by the addition of ammonium hydroxide, which shifted the pH toward 9–10. The basic layer was extracted with 50 ml of the ether: chloroform (3:1) mixture and then shaken for 10–15 min in a separating funnel. The first ether layer obtained after filtration was labeled B1. Furthermore, extraction from the aqueous layer was performed twice. The ether layer after separation was labelled B2 and B3. All three layers were passed collectively through anhydrous sodium sulfate using a funnel. Residue collected after evaporation was used in the TLC and GC-MS studies(9).

Neutral Extraction: Accordingly, the aqueous basic layer procured above was prepared as neutral by the addition of glacial acetic acid, which shifted the pH toward 7. Then, it was extracted using 50 ml of chloroform and shaken vigorously for 10–15 min. Subsequently, the chloroform layer was separated and labeled as N1. Further, extraction was repeated, and the organic layers were separated and labeled as N2 and NE. All three organic layers procured were added collectively and allowed to pass through anhydrous sodium sulfate. After evaporation, the dried residue was used for TLC and GC-MS (9).

Preliminary study using thin-layer chromatography (TLC): All filtrates were used for screening using the TLC method. The protocol for the preliminary examination of the sample was followed according to the method of the Manual of Forensic Toxicology (2005) (10).

Gas Chromatography-Mass Spectrometric (GC-MS) study: The extracted sample produced positive results in early TLC testing or screening and was used in the GC–MS study (Figure 2). Analyses were performed on a GC-MS-QP2020NX (SHIMADZU), JAPAN coupled with a mass spectrometer (SHIMADZU Technologies) for the compound study. A DV-5MS capillary column (30 m × 0.25 mm × 0.25 μm) was used to separate the compounds. High-purity helium was used as the carrier gas. The following conditions were used: column flow rate: 1.0 mL/min; split injection, split ratio, 100:1; injection volume: 1 μL; and injection port temperature: 280°C. The temperature procedure was as follows: 0–3 min, 150–150°C; 3–16 min, 150–280°C; and 16–26 min, 280–280°C.

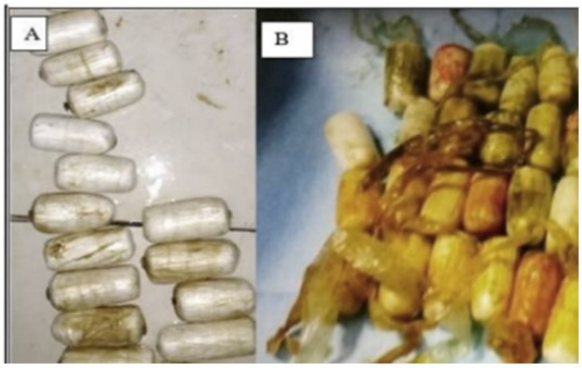

Figure 1. Cylindrical packets of heroin were recovered from the rectum

RESULTS AND DISCUSSION

Toxicological Findings: Both off-white powder material and light brownish-colored pasty material samples of the packing were positive for heroin by thin layer chromatography (TLC). TLC was performed using a mixture of ethyl acetate: methanol: and concentrated ammonia solution (85:10:5 v/v) as the development solvent. Visualization of the spots was achieved by spraying with acidified potassium iodoplatinate reagent. The extracted and screened samples were further analyzed using GC-MS. The GC-MS analysis revealed the detection of particular peaks with retention times of (16.61) for diacetylmorphine (DAM) and (9.61) for caffeine, which were recorded and interpreted as positive confirmation of heroin use. The identity of the analyte was established by comparing its MS spectrum to that of the derivatized standards in the MS library data system.The major concentrations of drugs components in the off-white powder material were 46.3-65.1 mg/ml for diacetylmorphine and 0.008-0.019 mg/ml for caffeine. However, the quantities of diacetylmorphine and caffeine in light brownish-colored pasty material ranged from 20.2-61.4 mg/ml and 0.011-0.036 mg/ml, respectively.

DISCUSSION

Body packing, a means of smuggling illegal narcotics, has become a widespread problem at the borders and airports of various countries (11).The use of body packing to carry illicit narcotics can be exceedingly dangerous due to the potential of leakage or container rupture. Because of the significant danger, acute fatal intoxication is the leading cause of mortality for body packers (12). After oral administration, it is well absorbed in the gastrointestinal tract and undergoes excessive first-pass deacetylation to morphine, yielding morphine and morphine-like metabolites.

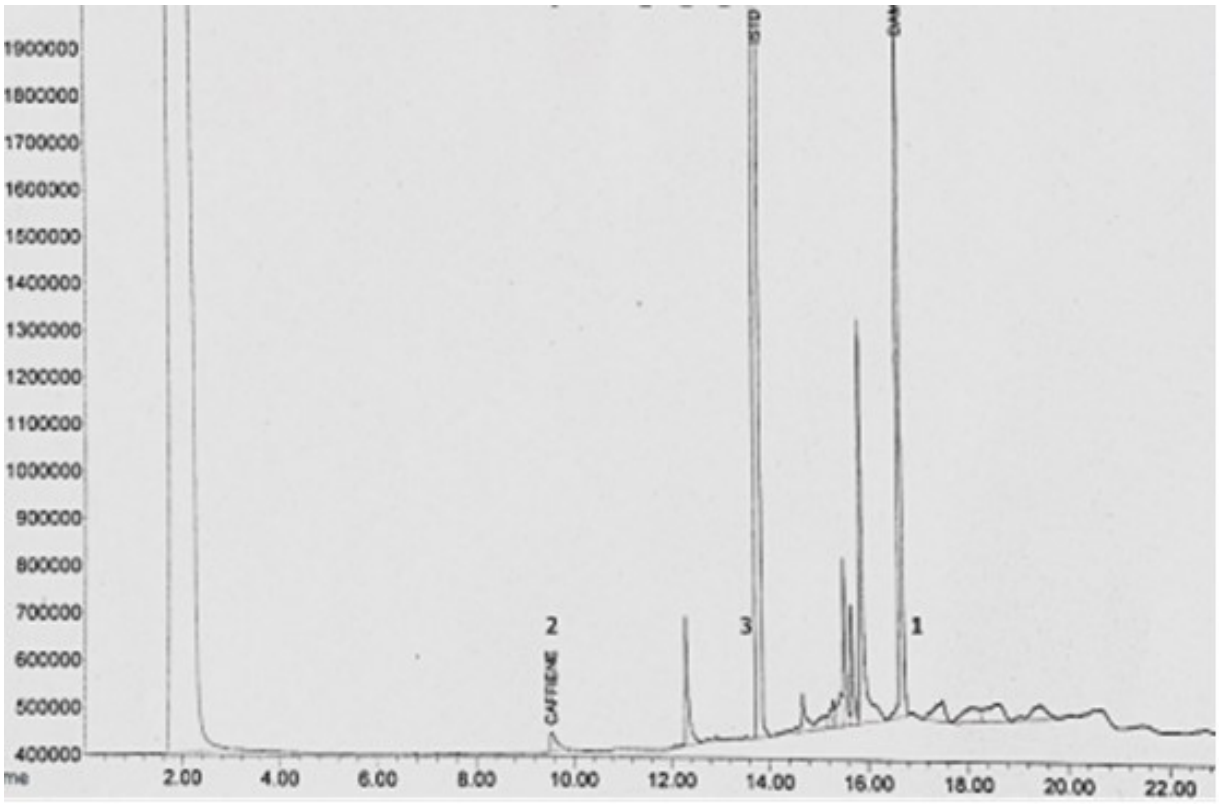

Figure 2. Chromatogram showing the influence of DAM (1), codeine (2), and ISTD (3)

Because of the substantial gastrointestinal first-pass action of heroin, morphine was the only metabolite discovered in the deceased's blood. An opiate overdose can result in the central nervous system and respiratory depression, pulmonary edoema, and death. In this example, opiate intoxication may explain the deceased's visceral edoema and pulmonary congestion(13, 14). In one case study, police officers found a 21-year-old Afghani boy improperly on the streets. He headed to the clinic, but he passed away due to his intoxication. Following the gastrointestinal tract autopsy, 97 whole packages and some empty plastic were opened and distributed, weighing 1.095 g. The samples were analyzed using high-performance liquid chromatography (HPLC), which showed heroin and noscapine. This victim died from a heroin overdose caused by the rupture of a single heroin package in the stomach (15). In another case study, the body recovered 3-5 days after the incident, as evidenced by an autopsy. Fifty pellets (packets) were recovered from the body, with 42 identical oval-shaped "egg" packages discovered in the stomach, two of which were broken, six in the small intestine, and two in the large intestine. The powder had a total weight of 267 grams. The powder samples from the damaged package and the other 48 packets were toxicologically tested and determined to be positive for heroin, caffeine, and codeine (16).

CONCLUSION

This paper presents the accidental death of a heroin body packer in India.The results reveal that the method for detecting heroin in packets inside the human body has been successfully established. The confirmatory GC-MS study revealed 38 intact wrapped packets containing heroin in the gastrointestinal tract and two damaged packets in the stomach. Each packet contains diacetylmorphine (heroin), monoacetylmorphine, codeine, diacetyl codeine, and caffeine. The percentage of diacetylmorphines varies from 5.6 to 27.8%. The stomach contains morphine and caffeine.

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Conflict of Interest: None

Author's Contributions:

All authors have read and approved the final version of the manuscript. Dr. Ajay Kumar Gautam: Contributed design, searched the literature, and drafted and edited the manuscript. Dr.Subhra Kumar Paul: All laboratory work, sample study, and data generation. Critically revised the manuscript and coordinated the work of other members. Ms.DeepaVerma: Involved in critically reviewing the manuscript and making write-up changes and guidance.

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