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Case Report

Plain radiography may underestimate the burden of body packer ingestion: A case report

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ABSTRACT

Body packing refers to the intracorporeal concealment of illicit drugs. Here we report the case of a 55-year-old body packer who presented with palpitations, visual hallucinations, and a sense of impending death. Abdominal radiography demonstrated five ovoid foreign bodies overlying the rectum. At subsequent gastrotomy and cecotomy, thirty-eight cocaine-containing packets were retrieved from the stomach and ascending colon as well as from the rectum. As the contraband market evolves new techniques to evade detection, evaluation of the burden of body packer ingestion has become increasingly challenging. As demonstrated in this case, plain radiography can grossly underestimate the burden of ingestion.

1. Introduction

"Body packing" refers to the transport of contraband via intracorporeal concealment. The first body packer came to medical attention in 1973 when a 21-year-old man presented with symptoms of small bowel obstruction following ingestion of a hashish-filled condom [1]. The internal smuggling of illicit drugs has since been reported in men and women, children and pregnant women, across the spectrum of illicit substances, and inserted orally, rectally, vaginally, or in the external auditory canal [2–5]. The benefits of modern medicine have also been used to great advantage by smugglers; anti-motility agents are ingested during transit while laxatives, enemas, or cathartics are used once the body packers reach their destination [6]. Similarly, the packaging of the substances to be transported has become more sophisticated. Drugs are tightly packaged in latex or cellophane sheaths, wrapped in additional layers of latex or cellophane, and sealed in a firm coating of wax. Other materials such as carbon paper or aluminum foil are often integrated into the packaging in order to modify its density and thereby prevent its detection by radiographic imaging [3,6].

In addition to these maneuvers to thwart radiographic detection, urine toxicology screening is frequently insensitive in cases of suspected body packing, particularly when there is no perforation of the sheath [7]. Therefore, individuals suspected of being body packers usually undergo imaging examination for confirmation. Plain abdominal radiography is most often used as an initial screening test, with a reported sensitivity of 47–95% [8]. However, calculation of sensitivity is a binary calculation, not accounting for the burden of body packer ingestion.

In the current report, we detail the case of a middle-aged man who presented with symptoms of drug toxicity. An abdominal radiograph confirmed the presence of drug packets in the rectum but grossly underestimated the burden of ingestion, which was later confirmed by CT scan and surgical retrieval. Estimating the burden of ingestion as well as the location of the ingested packets has both clinical and legal implications, especially given the potentially lethal complications associated with body packing [9].

2. Case report

A 55 year-old-man with a history of hypertension presented to our institution with complaints of his heart racing for three days, visual hallucinations, and a sense of impending death. Per a friend who accompanied him, the patient also suffered a seizure en route to the hospital. The patient initially denied use of illicit substances, a history of psychiatric illness, or gastrointestinal symptoms. In the emergency department, the patient was found to be hypertensive to 161/96 mm Hg and tachycardic to 103 beats per minute. Physical exam was unremarkable. Laboratory results were significant for hyponatremia to 123 mmol/L, hypochloremia to 78 mmol/L, an anion gap acidosis, hyperglycemia to

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408 mg/dL, leukocytosis to 12.4 K/μL, elevated lactate of 17.0 mmol/L, and elevated creatine kinase of 661 u/L.

In the emergency department, the patient was noted to be acting suspiciously, possibly flushing items down a toilet or fishing items out of a toilet bowl. Upon further questioning, the patient admitted to transporting cocaine in the distant past but denied recent use or ingestion of cocaine. A subsequent urine toxicology panel was positive for cocaine.

Shortly thereafter, the patient suffered a seizure and was emergently intubated for airway protection. Post intubation radiographs of the chest and abdomen (Fig. 1) demonstrated five rounded, similarly-sized opacities clustered in the region of the rectum suggestive of inserted foreign body material. Follow-up CT of the abdomen and pelvis demonstrated the true extent of foreign body ingestion; thirty-eight foreign bodies within the stomach, ascending colon, sigmoid colon, and rectum (Fig. 2A–D and Fig. 3).

The patient continued to deteriorate, developing hypertensive emergency. His rapid decline was favored to be secondary to a ruptured cocaine packet within the gastrointestinal tract. Unable to identify the next of kin and following a discussion with hospital leadership, it was decided that the only option to salvage this patient's life was to retrieve the foreign bodies via an emergent exploratory laparotomy. Alternatives included medical management with anti-epileptics, anti-hypertensives, gastric lavage, and/or enteral charcoal.

The patient was brought to the operating room and general anesthesia was administered. A digital rectal exam was performed and multiple white packets were retrieved from the rectum. Once the rectum was evacuated, the abdomen was prepped and draped, and the abdominal cavity was exposed. A vertical gastrotomy was made along the greater curvature of the stomach through which further white packets were retrieved. Following closure of the gastrotomy, the small bowel was palpated from the ligament of Treitz to the ileocecal junction without evidence for additional packets in the small bowel. Given the pre-operative CT findings, several packets were expected in the ascending colon, an expectation confirmed by cecotomy and retrieval of three cecal packets. During the course of the operation, the patient spontaneously evacuated additional packets from his rectum. The transverse colon, descending colon, sigmoid colon, and rectum were palpated and found to have no additional retained foreign bodies, and a repeat digital rectal examination at the conclusion of procedure was negative for retained foreign bodies. An intra-operative radiograph of the abdomen was inconclusive. Therefore, following irrigation and closure of the abdomen, an immediate post-operative CT was performed to confirm complete packet retrieval.

The pathology department grossly inspected the specimens prior to handing the recovered contraband over to law enforcement. In total, there were 38 white-yellow plastic capsules, each measuring approximately 4.0 × 2.0 × 2.25 cm in size. All were intact except one packet in which there was a 0.5 × 0.3 cm opening, confirming the medical team's initial suspicion for a ruptured cocaine packet underlying the patient's symptoms.

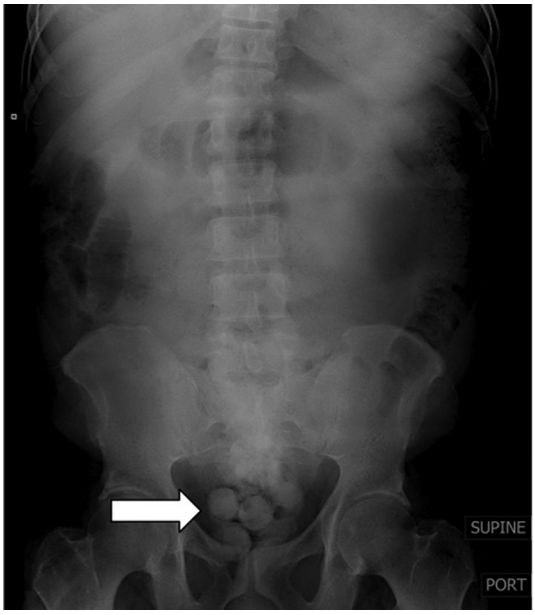

Fig. 1. Portable supine anteroposterior radiograph of the abdomen demonstrates five similarly sized, uniformly dense rounded opacities clustered in the rectal region (arrow) suggestive of inserted foreign body material. Note that similar appearing foreign material is not apparent elsewhere in the stomach, small bowel, or more proximal colon.

3. Discussion

Body packers typically come to medical attention with symptoms of bowel obstruction or drug toxicity. Alternatively, individuals may be brought to the hospital by law enforcement following their arrest [2]. Given its accessibility, simplicity, inexpensiveness, and low radiation dose, plain abdominal radiography is most often used for rapid diagnostic confirmation [10].

Four signs of body packing on plain radiography have previously been described [11,12]. The “tic-tac sign,” which is the most sensitive, refers to the identification of oblong, uniform, homogeneously dense opacities within the gastrointestinal tract. The “double condom sign” refers to a crescent of air hugging a well-defined opacity, a finding representative of a thin rim of air trapped between layers of the drug's latex or cellophane packaging. The “parallelism sign” refers to identification of multiple opacities arranged parallel to one another within the bowel lumen. Lastly, the “rosette sign” refers to the appearance of air-trapped with the knot tied at the end of the drug's latex packaging.

Although most studies have reported plain abdominal radiography to have a sensitivity of 85–90% for the detection of internally concealed contraband, there have been studies reporting sensitivities as low as 47% [8] and even a recent large prospective trial reporting a sensitivity of only 77% [13]. On the other hand, CT is considered the gold standard for imaging detection of body packing, with sensitivities approaching 100% [14]. Some success has also been reported with both ultrasound and MRI [15–17], however these modalities are less commonly used due to their operator-dependence in the case of ultrasound and expense and relative inaccessibility in the case of MRI.

Considering only the sensitivity of an imaging modality, however, is insufficient. While a number of studies have reported on the ability of an imaging modality to determine whether or not a person is internally smuggling illicit substances, a modality's ability to detect the burden of drug packet ingestion/insertion and its location within the gastrointestinal tract is equally important. In the current case, abdominal radiography revealed five drug packets within the rectum but obscured the presence of numerous others in the stomach and ascending colon. Furthermore, the rectosigmoid drug packet burden, which prospectively appeared to be well evaluated on abdominal radiograph, was in fact three-fold greater when evaluated by CT. With regards to surgical management of body packers, the location of the drug-containing packets can be useful, if not vital information. In the current case, based on CT findings, the surgeons knew prospectively that a gastrotomy and cecotomy would be required to achieve complete recovery of all the gastrointestinal drug containers, and to ensure that the potentially ruptured container was among those retrieved.

The management of body packers is dependent upon their symptoms at presentation. Asymptomatic body packers, who generally present in police custody, may be allowed to spontaneously pass their internal cargo with low risk of rupture [18,19]. In those experiencing bowel obstruction or perforation, surgical treatment is required. In