

Management recommendations for body stuffers at emergency units

Hossein Hassanian-Moghaddam^{1,2}, Fatemeh Amraei³, and Nasim Zamani^{1,2}

¹ *Social Determinants of Health Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran*

² *Department of Clinical Toxicology, Loghman Hakim Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran*

³ *Department of Emergency Medicine, Iranshahr, Iran*

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Managing body packers and stuffers is a challenge to emergency physicians, stuffers in particular, as there is no systematic approach to their treatment. The aim of this study was therefore to review all available literature on body stuffing and propose a guide to manage these patients. We searched Medline/PubMed, Google Scholar, and Scopus for published work on body stuffers using key words “body stuffer”, “body stuffing”, “poisoning”, “toxicity”, and “treatment” without a time limit and retrieved 290 articles, of which 61 remained after exclusion of those on “body packers” and repetitive documents. This review article evaluates and summarises the information gathered from them. The main step in body stuffer management is observation to make sure that they have passed all the swallowed packages of drugs of abuse. In some cases, imaging can be quite useful. Diagnostic pitfalls may be avoided with abdominopelvic CT without contrast, which is probably the best diagnostic method to determine the presence and the number of packages in these patients. Treatment should be specific for each group of drugs, whether it is opioids, cocaine, or amphetamine. Surgical interventions are indicated for obstruction of the intestines or package rupture. Legal precautions should be taken because of the legal complexity of body stuffing cases.

KEY WORDS: body smuggling; conservative therapy; substances of abuse; surgery; toxicity

Body packing and body stuffing are terms used to describe swallowing drug-filled packets or placing them in body cavities (also known as body pushing) to avoid detection by law enforcement (1–3). The difference between the two is in the quantity of packets swallowed and the quality of drug wrapping. In the first case, drugs are tightly and securely packed for smuggling (4, 5). Body packers (aka *mules*) usually swallow 50 to 100 two to eight-cm packages or up to one kilogram of a drug, but the quantities can greatly vary (5–7). The packaging is usually sealed in paraffin or fiberglass, which is radiopaque. Antiemetics, and antimotility medications are used to prevent vomiting and slow down bowel movement until the drugs can be safely retrieved (7).

Body stuffing, in turn, stands for quick ingestion of drugs to avoid police arrest (8–10). Body stuffers usually swallow one to fifteen 0.5–2-cm packages (7). Considering that the packages are not intended for drug smuggling in the body, stuffers run a higher risk of rupture than body packers (5, 11, 12). Body packers, in contrast, run a higher risk of surgical complications (13, 14). However, it can be rather difficult to tell the difference if the patient is uncooperative on presentation to the emergency department.

Both packing and stuffing have been described as a health issue involving the risk of overdosing since 1973 (1), and physicians worldwide have encountered major diagnostic and management dilemmas with these patients.

However, body stuffing has received less attention than body packing and is sometimes very challenging to treat body stuffers, because there is no consistent literature or a systematic approach to their management. Therefore, the aim of our study was to gather all published articles on body stuffers in English, and try to summarise patient managing options and recommend a reference treatment protocol for emergency practices.

METHODS

We searched Medline/PubMed, Google Scholar, and Scopus for publications on body stuffers in English using the following key words: “body stuffer”, “body stuffing”, “poisoning”, “toxicity”, and “treatment”. We did not set a time span. The search resulted in 290 retrieved articles, from which we excluded those on “body packers” and reprints/republications. This review therefore includes 61 articles that were completely relevant to the topic at hand.

RESULTS

Trends in body stuffing

Body stuffers are usually drug users or local street dealers who hide drugs in the gastrointestinal (GI) tract (oropharyngeal cavity, stomach, and rectum) or other less usual sites such as the external ear canal (usually cannabis resin), vagina, or under the foreskin (13, 15–17).

There are no data about the prevalence of body stuffing. This act is most commonly reported in urban areas, where illegal drugs are more common and legal prosecution more serious. The most common drugs concealed by body stuffers are cocaine, heroin, and methamphetamine (17–19). The risk of overdose in body stuffing is strongly related to the type of packaging and the amount of the drug stuffed, but one study in 132 patients reported no case of rupture and overdose in either packers or stuffers (19). However, this is an exception to what we usually encounter in our daily practice. An analysis of 683 packages in body stuffers showed that 74 % of them used filter paper, and 11 % single-layer plastic wraps or pouches (20). Mortality due to body stuffing has been reported repeatedly (1, 21), but there are no epidemiological data on that either.

General approach to the treatment of a body stuffer

On admission of a suspect case, physicians in emergency units should try to get as much information as possible while taking history: drug type and its formulation, time passed from ingestion, number of the ingested packages, total amount of the drug ingested, and the type and material of wrapping. However, body stuffers are usually under police arrest or escort and tend to deny ingesting drugs (11). Reports about incarcerated drug dealers emphasise the importance of always suspecting drug ingestion (21).

Physical examination should establish three parameters: specific signs and symptoms of drug poisoning, signs and symptoms of GI obstruction or respiratory depression, and the location of packages in the body (3, 22–26). Cocaine poisoning manifests itself as hypertension, tachycardia, agitation, focal neurological symptoms, mydriasis, diaphoresis, seizure, hyperthermia, and tremor (13, 21, 27). Methamphetamine shows similar symptoms to cocaine (17). Heroin or opium-poisoned patients present with decreased level of consciousness, myosis, slow bowel movement, hypotension, bradycardia, and hypoventilation (28). A number of reports speak of a combination of both groups of symptoms, which is probably due to the ingestion of several types of street drugs. Therefore, emergency physician should be looking for both stimulant and opioid-like symptoms (29).

Details about drug wrapping provide useful insights about the outcome. Wrapping is directly related to the course of drug release in the body (18). Single-layer packages release more drug over time and pose a higher risk of

poisoning than packages with more layers, but these, in turn, pose a higher risk of gastrointestinal obstruction (30). If the ingested drugs are not wrapped, symptoms occur in less than three hours (27). Paper wraps release drugs more readily than plastic bags.

Most patients remain asymptomatic in the first 24 h, but 26 % show symptoms (18 % mild, 4 % moderate, and 4 % severe) (12). One study also reported severe symptoms in 4 % of the patients (13).

Determining optimum observation time is difficult, especially in asymptomatic patients, but, according to two studies (31, 32), changes usually occur within six hours of ingestion. However, the six-hour observation proposed for body stuffers by these two studies has been criticised, as loose wraps may leak later and cause severe consequences (12, 33).

In summary, patients are evaluated on admission; if no sign or symptom is found and body stuffing (not packing) is confirmed, they should be observed until the packaging is passed and its expulsion confirmed by repeated negative abdominopelvic CT. Otherwise, the patient is to be treated until the signs and symptoms have withdrawn.

Diagnostic modalities in body stuffing

Imaging

There is no gold standard for diagnostic imaging with body stuffing, and literature is lacking in this respect.

Plain abdominal radiography is the most common imaging method for the detection of ingested drug packages in body packers. Packages show as oval or round densities with a gas halo from the gas trapped in the package (34). Its advantages, such as low radiation doses, low cost, and high speed, put X-ray on the top of imaging options (35). In body packers, X-ray has been highly sensitive, with sensitivity rates ranging from 40 to 100 % (5, 36–38). In body stuffers, however, the sensitivity of X-ray imaging is limited by factors such as much smaller number and size of packages than in body packers and imaging artifacts caused by bowel movement, gas distention, and high bowel content (6, 34, 39–43). A study of cocaine vial stuffing reported only 9 % positive findings (44). In another study on cocaine body stuffing, no positive radiograph was obtained (45), whereas in a study on heroin body stuffing, only one radiograph out of 32 revealed evidence of body stuffing (28). In practice, X-ray is seldom used in body stuffers, unless there is concern about perforation or obstruction or the patient is suspected of body packing.

The advantages of ultrasound include accessibility, reproducibility, low cost, and no radiation. On the downside, its success much depends on operator's skill and experience in interpreting results (37). Packages appear as hyper echogenic, ovoid, immobile, and multiple densities with posterior shadowing in the gastrointestinal lumen (43, 46–48). Some suggest that ultrasound can be used for

screening at border crossings and airport terminals (49). In practice, however, the success of ultrasound is comparable to that of X-ray (48, 49). Current knowledge is too scarce to fully support its use in the detection of body stuffing.

Computed tomography (CT) is considered the best method to visualise packages in body packers and determine their number. It is often recommended in highly suspect cases which resulted negative on X-ray (36). The major disadvantages of CT scan are high cost and high radiation dose. CT can identify the size, location, and number of packets ingested. It can also detect complications such as leakage and rupture (35, 37). It can detect packages in various parts of the GI lumen such as stomach, small and large intestines, rectum, and even vagina (6, 37). Unfortunately, there is little knowledge about its use in body stuffers. Eng et al. (31) reported a false negative finding of non-contrast CT in a verified case of cocaine body stuffing. A study on 24 body stuffers showed that although non-contrast CT was not as sensitive as that in body packers, it was still a better choice in detecting small bags compared to contrast CT (50). Another study by the same authors (51, 52) advocates low-dose CT as a screening method for body stuffers if the packages are bigger than one centimetre in size. However, in patients with severe clinical symptoms, standard CT scan is more helpful due to better image quality, especially if leakage is suspected (53).

In summary, CT scan may not be needed in body stuffers who have admitted ingestion and have clinical signs and symptoms compatible with the reported substance. However, it can still help to determine the exact number and locations of the packages. For cases with unclear history, non-contrast CT is the method of choice. We recommend abdominopelvic CT without contrast in every suspected case of body stuffing due to low sensitivity of other imaging methods in these patients.

The use of magnetic resonance imaging (MRI) in body stuffers has not been reported so far.

Laboratory testing

Generally, in patients with signs and symptoms of poisoning who show altered mental status, blood glucose level testing is essential. In women who can have children, pregnancy test is also indicated. Electrocardiogram can help to establish dangerous conduction issues. Other evaluations are mainly guided by the type of ingested drug and the severity of poisoning. Opioid patients should take arterial blood gas (ABG) tests to check for respiratory depression and acidosis. Positive urine screening tests for substances of abuse may indicate a rupture and/or leakage of the ingested drug in a patient who has not used the drug before.

Standard treatment

Figure 1 summarises the recommended steps to managing body stuffers. If there is leakage, the first is to

give them a single dose of activated charcoal (AC). Although clinical evidence is scarce, one study has shown that AC in a 5 to 1 AC to drug ratio can absorb 99 % of the ingested cocaine (53).

Whole bowel irrigation (WBI) with polyethylene glycol solution has been described in body packers (54), but it may be contraindicated in unstable or asymptomatic body stuffers (55), because the ingested drug packages are usually poorly wrapped, and WBI might increase the risk of rupture and drug absorption with high volume of fluid in the GI lumen. Researchers who favour WBI also mention the risk of poisoning that could ensue shortly after the procedure, which calls for immediate supportive care (56).

Localisation of drug packages with abdominopelvic CT may help to inform further treatment decisions. Endoscopic retrieval of packages trapped in the stomach may be indicated in clinically stable patients with access to intensive care and should be performed by a highly trained and experienced endoscopist (57). Endoscopy entails a higher risk of rupture and manipulation with big and loose packages is not advised if intensive care is not at hand or the endoscopist is not highly experienced in the procedure. Furthermore, endoscopy patients should not receive AC because it blurs the view.

After initial decontamination, the management of symptomatic patients depends on the drug that caused poisoning. It can be identified by taking the history if the patient is cooperative or by the patient's signs and symptoms.

Patients with probable opioid poisoning are treated for respiratory depression and should receive adequate ventilation. Those with respiratory rate of 12 and higher and oxygen saturation over 90 % should only be kept under close observation. If oxygen drops under 90 % and breathing is still spontaneous, the patient should receive supplemental oxygen and 0.05 mg of naloxone intravenously or intramuscularly, if intravenous administration is not possible, until ventilation is resolved. In apnoeic patients, ventilation with a bag-valve mask, supplemental oxygen, and 0.2–1 mg naloxone are indicated. No response after 5–10 mg of naloxone is the indication for tracheal intubation and artificial ventilation (58). Early intubation may be indicated in unstable patients, especially in those who have ingested packs containing stimulants, unless an antidote is available (59).

Patients showing signs and symptoms of cocaine or methamphetamine poisoning are mainly treated with benzodiazepines to control psychomotor agitation, hypertension, and hyperthermia. Diazepam is usually given intravenously in the dose of 5–10 mg every 3–5 min until agitation and hypertension are resolved. If benzodiazepine treatment fails to control hypertension, phentolamine (1–5 mg) is indicated. Beta blockers are contraindicated. If hyperthermia persists after benzodiazepines, cooling blankets and evaporation are advised. Uncontrollable severe cases sometimes call for neuromuscular paralysis (59).

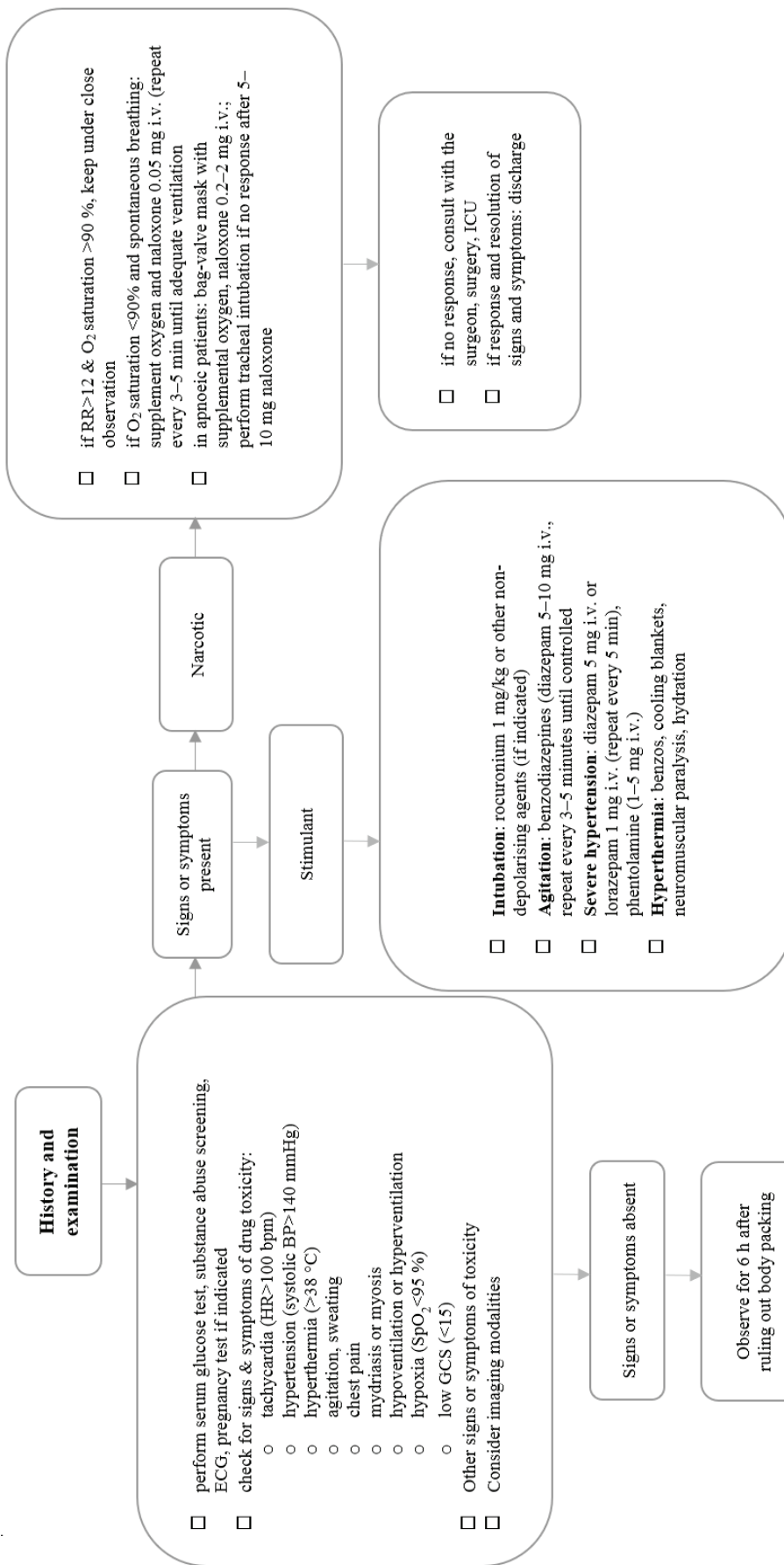


Figure 1 Body stuffer management algorithm

Patients with hypo or hypertension, hyperthermia, tachycardia, and deep and persistent mental disturbances who do not respond to pharmacological therapy may undergo urgent surgery to remove the drug packages. Consult with the surgeon to weigh the benefits against the risks, such as the risk of rupture and drug leakage, which is much higher with body stuffers, as the ingested packages are much thinner and surgery involves some aggressive procedures such as milking (60). Whether or not the patient is operated on, if severe symptoms or the threat of rupture persist, the patient needs to be monitored in the intensive care unit (61). If the patient was operated on, follow-up abdominopelvic CT is recommended to check for any remaining packets (60).

Asymptomatic patients should be closely observed, but for how long is a matter of controversy (12, 13). If ingested packages are large and poorly wrapped, longer observation is needed. Patients due to return to police custody should also be observed for longer, especially if they have to travel far. When there are positive imaging findings, follow-up non-contrast CTs are recommended to ensure that the GI tract is clear. Consulting with medical toxicologist may help to decide on when to discharge the patient.

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Preporuke za obradu pacijenata primljenih na odjel hitne pomoći koji su progutali paketiće s drogom (*body stuffers*)

Medicinska obrada osoba koje su progutale ili u tijelu skrivaju pakete s opojnim sredstvima veliki je izazov liječnicima na odjelu hitne pomoći. Razlikuju se osobe koje su pakete (vrećice, ampule) progutali s namjerom da ih prokrijumčare (tzv. mule ili *body packers*) i one koje su progutale pakiranja u strahu da ne budu uhvaćeni s drogom (tzv. *body stuffers*). U potonjem je slučaju riječ o manjim količinama, ali mnogo slabije upakiranih tvari, zbog čega može doći do puknuća omota, curenja njegova sadržaja u tijelo, predoziranja i smrti. Svrha je ovoga istraživanja bila napraviti pregled dostupne literature upravo o toj rizičnoj skupini i predložiti standardnu obradu takvih pacijenata. Za pretragu su korišteni web pretraživači znanstvenih radova Medline/Pubmed, Google Scholar i Scopus pomoću ključnih riječi “body stuffer”, “body stuffing”, “poisoning” (trovanje), “toxicity” (toksičnost) i “treatment” (liječenje) bez vremenskog ograničenja objavljivanja. Pretraga je izbacila 290 članaka, od kojih su izuzeti oni koji se odnose na *body packers* i oni koji se ponavljaju. Stoga se ovaj pregledni rad u konačnici oslanja na korisne informacije dobivene iz 61 relevantnog članka o toj temi. Najvažniji je korak pri obradi *body stuffera* promatranje i praćenje, kako bismo bili sigurni da su izbacili iz tijela sve progutane pakete s opojnim drogama. U pojedinim slučajevima tehnike snimanja mogu se pokazati veoma korisnima. Dijagnostičke zamke koje obično daju lažno negativne rezultate mogu se izbjeći beskontrastnom kompjutorskom tomografijom (CT-om) područja trbuha i zdjelice, kao ponajboljom metodom za utvrđivanje postojanja i broja paketića u tih pacijenata. Liječenje treba biti prilagođeno vrsti droge, budući da opiodi, kokain odnosno amfetamin, zahtijevaju različitu obradu. Kirurške su intervencije indicirane kod opstrukcije crijeva ili puknuća paketa. Također valja imati na umu zakonske implikacije zbog kaznene naravi skrivanja droga u tijelu.

KLJUČNE RIJEČI: ilegalne opojne tvari; kirurški zahvati; konzervativno liječenje; krijumčarenje droga u tijelu; toksičnost