



Extreme bradycardia in a case of benzodiazepine intoxication in a “body stuffer” (Bradicardia extrema en un caso de intoxicación por benzodiazepinas en un “body stuffer”)

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ABSTRACT

Transport intoxication in the form of body stuffing, a dangerous practice involving the ingestion or insertion of psychoactive substances into the body to evade detection during drug trafficking, represents a major medical problem that requires immediate attention in the emergency department. Unlike body packing, where substances are encapsulated and swallowed for later extraction, body stuffing involves direct ingestion without wrapping, which greatly increases the risk of serious intoxication and even death. Benzodiazepines, due to their high demand on the black market, are among the most common drugs used in body stuffing. The management of this type of poisoning in the emergency department presents a significant clinical challenge due to the variability in clinical presentation, which can range from drowsiness and confusion to respiratory depression and coma. Rapid and accurate assessment is critical for effective management. The initial focus is on patient stabilization and life support as needed, which may include administration of naloxone to reverse opioid effects, mechanical ventilation for respiratory depression, and management of seizures if they occur. An appropriate approach in the emergency department is crucial to improve the prognosis and quality of life of patients affected by this type of poisoning. Timely intervention and expert management can prevent serious complications and even death. We present the case of a patient with benzodiazepine intoxication with an atypical presentation due to clonazepam transport with bradycardia and its management in an institution in Bogotá-Colombia.

1. Introduction

Intoxication with psychoactive substances in the context of “body stuffing” is a medical challenge that requires immediate and precise

attention in the emergency department. Body stuffing, an illegal practice used to evade detection during drug transportation or trafficking, involves the ingestion or insertion of substances into the body. Benzodiazepines, drugs with sedative-hypnotic and anxiolytic

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properties, are frequently used in this practice due to their high consumption in the country.

It is critical that physicians are trained to recognize and effectively treat benzodiazepine intoxication in the body stuffer setting, as a proper approach can make a difference in the patient's prognosis. Through a clear understanding of the clinical and therapeutic aspects involved, quality care can be provided that protects the health of those affected by this condition.

At the end of the clinical case, we hope to have provided a comprehensive view on the approach to benzodiazepine intoxication in the context of body stuffer, with the ultimate goal of improving the care and prognosis of affected patients. The information and strategies presented in this case report can be used as a guide for future similar cases, with the aim of optimizing the quality of care in the emergency department and ensuring the safety and well-being of benzodiazepine intoxicated patients in body stuffer situations.

2. Case presentation

A 21-year-old male, weighing 53 kg and 160 cm tall, in prison with a history of psychoactive substance use of cannabinoids, cocaine, inhalants and ethyl alcohol for 6 years, and depressive disorder for 1 year, without pharmacological management, with no other relevant history. Admitted for 72 hours of evolution that began with abdominal pain of moderate intensity, predominantly left hypochondrium, colic type, associated with constipation and loss of consciousness, without specifying the duration of the episode or other characteristics, 48 hours before with ingestion of capsules as body stuffer in the amount of 35 bags each with 100 tablets of clonazepam (2 mg tablet presentation), 15 packages of Cannabis sativa of unspecified weight and 10 bags with cocaine content, each with approximately 5 g; management with intravenous fluids and antispasmodics such as hyoscine-butylbromide 20 mg intravenous, without adequate clinical response. During observation, the patient presented expulsion of multiple drug bags (17 packages - Fig. 1), tachycardia and anxiety, so it was decided to refer the patient to Santa Clara Hospital in Bogota - Colombia, during initial evaluation, the patient showed clinical deterioration due to bradycardia and hypotension, During the initial evaluation of the patient with clinical deterioration due to bradycardia and hypotension, an electrocardiogram was performed showing extreme sinus bradycardia with a heart rate of 35 LPM (Fig. 2) and glucometry with evidence of hypoglycemia (57 mg/dl), subsequently the patient became drowsy and the clinical picture was classified as hypnotic sedative toxindrome and secondary cardiogenic shock, and flumazenil 0.2 mg intravenous atropine was started. 2 mg intravenous flumazenil, atropine at a dose of 1 mg and intravenous fluids with dextrose supplementation. The patient was transferred to the intensive care unit where continuous monitoring was performed with persistent asymptomatic bradycardia for 12 hours



Fig. 1. Gastric content of drug bags excreted per patient during the first 72 hours of clinical picture.

without new episodes of hypotension or respiratory failure.

Assessed by toxicology service with evidence of bradycardia, other vital signs normal, alert, with mydriatic pupils of 4 mm reactive, no evidence of hypersalivation, no signs of respiratory distress, afebrile, no skin coldness, no pallor or redness, with abdominal pain at the level of colic frame without peritoneal irritation, with decreased intestinal motility, without loss of bladder or anal sphincter control.

Upon admission to the intensive care unit, paraclinical tests were performed (Table 1) and urine toxicity tests were positive for cannabinoids, negative for benzodiazepines, cocaine, scopolamine, hydrocarbons, opiates and amphetamines (Table 3). An abdominal x-ray was performed with evidence of fecal matter at the level of the colic frame, without hydro-aerial levels or distension of loops without identifying the presence of foreign bodies and simple abdominal tomography without additional findings (Table 2).

The patient was considered as not requiring antidotes, the oral route was withdrawn and it was indicated to start intestinal irrigation with polyethylene glycol 1 sachet of 17 g dissolved in 1 liter of water every 2 hours until clear stools were obtained, however the patient refused to eat at established times, persisted with severe abdominal pain and asymptomatic bradycardia with progressive improvement of the rest of the symptoms, without new stools for 5 days later, Given the persistence of intense abdominal pain in the last 24 hours and the risk of rupture of the loop, intestinal irrigation with polyethylene glycol is indicated again, but it is not possible to be carried out again because of the patient's decline. On the seventh day of hospitalization she had new stools (#2) without presence of capsules, later improvement of abdominal pain, so she requested voluntary discharge. At the time of discharge with clinical resolution with persistence of asymptomatic bradycardia and mydriasis of 3 mm without other associated symptoms, with an appointment for control by the toxicology service.

Retroperitoneal vascular structures of normal course and caliber. No retroperitoneal masses or adenomegaly are observed. The visualized portion of the stomach and the small and large intestinal loops do not present obstructive pattern. Abundant fecal matter in rectal ampulla. CONCLUSION: Findings in relation to constipation.

Patient evaluated 1 month after discharge in outpatient toxicology, where the process was considered resolved, at the time asymptomatic and hemodynamically stable, with a heart rate of 60 beats per minute, intoxication was considered resolved.

3. Discussion and literature review

There are two different modalities for transporting illegal substances inside the human body in order to avoid detection, the first and best known "body packer" also called higher angels, mules or muleteers that are characterized by a planned and relatively coordinated use for smuggling purposes and the "body stuffer" which is the hasty use or consumption of drugs in order to evade law enforcement [1,2] Table 4.

Few epidemiological data give an idea of the magnitude of the "body Stuffer" problem. However, such cases are not uncommon in urban centers where illegal drug use is common. Body Stuffer packaging methods vary widely from region to region. Knowledge of local packaging practices is essential to assess the potential risk of drug breakage and toxicity. The most common of the many drugs are cocaine, heroin and methamphetamine [3].

Body stuffer often run the risk of acute toxicity due to poor packaging of substances or use of materials with a dissolving risk at the intestinal level. Body stuffer tend to consume smaller quantities for personal sales compared to body packers who tend to consume packages containing large quantities of drugs (around 1 kg) for trade [4]. Body stuffer should be suspected in any patient who presents to the emergency department or other clinical setting after an arrest on a drug charge and rapidly develops some form of toxindrome [4].

When evaluating a patient with suspected substance transport by this means, the questions to ask are:

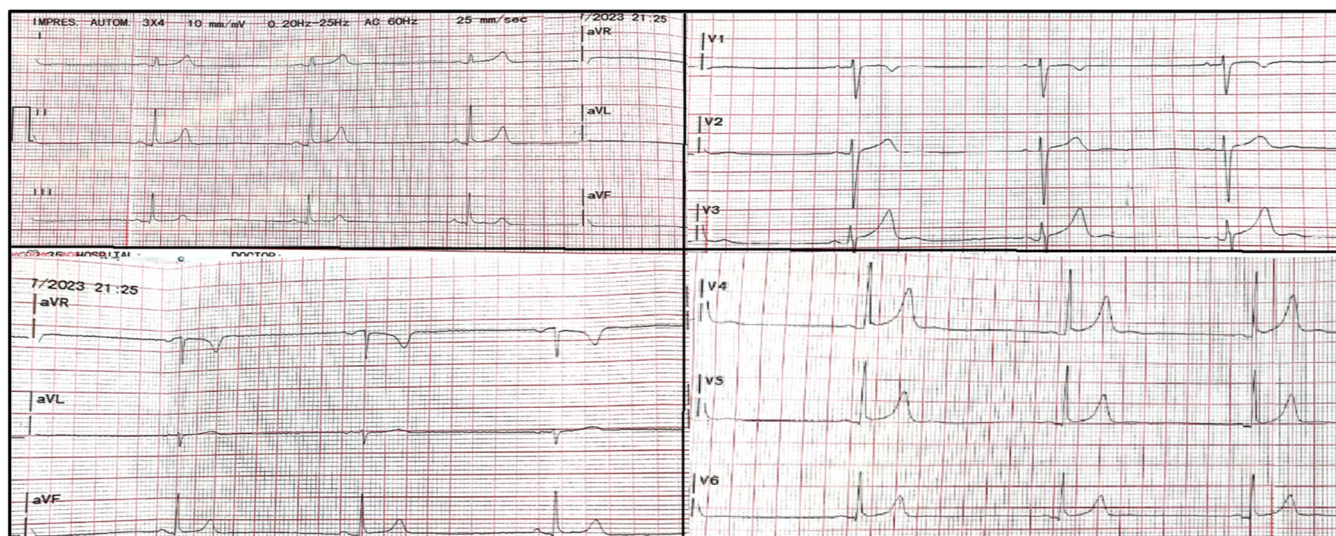


Fig. 2. ICU admission electrocardiogram taken 72 hours after onset of clinical picture. EKG with evidence of sinus bradycardia, heart rate of 35 bpm, normal axis, no AV block or bundle branch block, no nodal rhythm with normal QRS duration of 430 ms corrected by Bazett.

Table 1

Paraclinics - taken during hospitalization, there is evidence of blood picture without alterations, without anemia, with preserved renal and hepatic function, without electrolyte disorders, the day corresponds to the day of hospitalization since admission. (Leu-Leukocyte, Neu-Neutrophils, Hgb-Hemoglobin, MCV-Mean Corpuscular Volume, Pla-q-Platelets, Cr-creatinine, BUN-Uremic Nitrogen, TGO-glutamic oxaloacetic transaminase, TGP-glutamic pyruvic transaminase, BT-total bilirubin, BI-indirect bilirubin, BD-direct bilirubin, serum Na-sodium, serum K-potassium, serum Ca-calcium, serum Mg-magnesium.). Own elaboration

Day	Leu	Neu	Hgb	Hto	VCM	Pla-q	Cr	BUN	TGO	TGP	BT	BI	BD	Na	K	Cl	Ca	Mg
1	6750	4580	15.1	44	83	229	0.9	10	38	30	0.6	0	0.6	140	4.2	108	-	2.1
2	8330	5081	14.9	43.4	85	265	1	7	30	26	0.5	0.3	0.2	141	3.7	112	8.3	-
3	-	-	-	-	-	-	1.1	10	-	-	-	-	-	141	4.7	-	-	2
5	6420	3420	16.1	47.2	84	302	1		-	-	-	-	-	138	4.3	104	-	-

Table 2

Arterial gases In acid-base balance, without hyperlactatemia, without oxygenation disorder. Own elaboration

Parameter	pH	PCO2	PaO2	PAO2	HCO3	Lac	BE	SO2	PA/FI	Glu
Result	7.48 mmol/L	26 mmol/L	88 mmol/L	75 mmol/L	23.1 mmol/L	0.7 mmol/L	-4.1	-	419	73 Mg/dl

Table 3

Toxicological Taken 48 hours after admission to hospital, 5 days after ingestion. Own elaboration

Parameter	Cannabinoids	Benzodiazepines	Amphetamines	Opioids	Hydrocarbons (aromatic, toluene, benzene, xylene)	Scopolamine	Cocaine
Result	Positive	undetected	undetected	undetected	undetected	undetected	undetected

- > When was the drug ingested?
- > How many packages were consumed? What substances and preparations were used?
- > How were they packaged and what materials were used?
- > Has the patient had gastrointestinal obstruction or discomfort?

It should be remembered that, if the patient is in police custody, the medical history may be vague or imprecise and vital signs and examination may be more important.

The physical examination of known or suspected body stuffer should focus on looking for signs of toxicity of the ingested substance, bowel obstruction, and the location of the packaging. Body stuffer often show signs and symptoms of toxicity within hours of ingestion. Intestinal obstruction is very rare, but there is a latent risk [4,5].

Cocaine is often consumed by "body stuffer". Therefore, physicians should be alert to the symptoms of sympathomimetic toxindrome, which typically include hypertension, tachycardia, diaphoresis, restlessness,

tremors, convulsions, hyperthermia, and mydriasis, with this type of intoxication being a surgical emergency because of the risk of mesenteric ischemia associated with local vasoconstriction. Ingestion of benzodiazepines may cause a sedative-hypnotic toxindrome, often involving central nervous system depression and in the specific case of clonazepam; bradycardia very rarely [5].

Los "body stuffer" pueden introducir empaques en orificios y lugares distintos del tracto gastrointestinal. Médicos forenses capacitados en la evaluación y manejo de "body stuffer" inspeccionan la boca, fosas nasales, orejas, ombligo, prepucio, recto y la vagina de los sospechosos [6].

There is little evidence and no controlled studies to determine the optimal paraclinical method for diagnosing a body stuffer. Body stuffer imaging is generally not performed if the history and clinical presentation are simple and consistent. However, double-contrast CT scans are recommended if the history is unclear or if it is necessary to determine the presence of drug packets in the gastrointestinal tract. Abdominal



Fig. 3. Abdominal X-ray shows fecal impaction. reflex ileus.

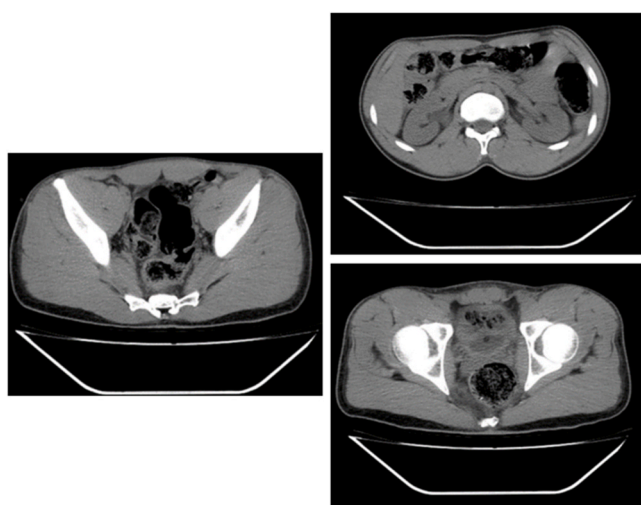


Fig. 4. . Simple abdominal tomography.

Table 4
Distinctive features between body-packer and body-Stuffer. Adapted from toxicologia goldfrank

FEATURE	BODY - STUFFER	BODY - PACKER
Anatomy	Oral	Oral, vaginal, rectum
Risk	Medium - High	High - Very high
Number of elements	Scarce	Abundant
Complications	Toxindromes	Mechanics - Toxindromes
Security	Low - None	Moderate - High
Guideline	Spontaneous	Programmed

Abbreviations; O obstruction, P pylorus, VI ileocecal valve

radiographs are recommended only for suspected complications such as intestinal obstruction or gastrointestinal perforation [6-13].

The usefulness of toxicological detection of body stuffer remains unclear. In this case, a urine test can help determine the substance ingested. However, it is difficult to distinguish positive results for recreational use from one for drug release from an ingested package. The use of gastrointestinal decontamination for body stufferers is controversial and there are few clinical studies to guide management. It is recommended that a single dose of activated charcoal is reasonable in most body stuffer [14].

Benzodiazepines are the initial treatment when cocaine or

methamphetamine toxicity occurs. Benzodiazepines have a high oral absorption with a high degree of protein binding (60–95%), with hepatic metabolism, they do not have a direct mechanism of action that causes a significant decrease in heart rate. Their main action is focused on the central nervous system, specifically on the agonism of gamma-aminobutyric acid (GABA) receptors, which generates a hyperpolarization of the cell by activating the chloride channels associated with the GABA receptor, as well as the inhibition of the presynaptic reuptake of adenosine, which exerts a negative modulatory effect on the presynaptic release of glutamate, all this leading to generalized postsynaptic neuronal hyperpolarization and suppression of the propagation of the electrical impulse which generates sedative, anxiolytic and hypnotic effects [15,16].

Extreme bradycardia is typically associated with intoxication by other types of substances, such as calcium channel blockers or beta antagonists, which can directly affect the electrical activity of the heart and reduce the heart rate. In the case of benzodiazepine intoxication, the clinical manifestations would be more related to central nervous system depression, although cases have been described where clonazepam could generate this complication, probably related to the potential properties of blocking L-type calcium channels [17].

These effects could include extreme drowsiness, difficulty breathing, muscle weakness, decreased coordination, confusion, and possibly loss of consciousness. In extremely rare and severe situations, excessive central nervous system depression could indirectly influence cardiovascular function, possibly resulting in bradycardia, but this would be a rare consequence and is not a hallmark of benzodiazepine intoxication per se [9-13,16,17].

Patients who do not respond to medical therapy in severe sympathomimetic or benzodiazepine intoxication may require surgery to remove the retained elements. Symptomatic patients are effectively treated without surgical intervention. Patients with severe symptoms and signs or potentially dangerous ingestions should be observed in the intensive care unit. Asymptomatic patients should be observed for signs and symptoms of toxicity. The optimal observation time has not been determined, but 6–24 hours is recommended. Patients who have ingested a small amount (less than 10 g), who do not present complications under observation and who remain asymptomatic after 6–12 hours of follow-up are discharged [18,19].

4. Conclusions

Intoxication in body stuffing poses unique challenges due to the clandestine nature of this practice and the possibility of multiple substances involved. Secondary to this and the low protection/security in the packaging of the ingested packages, patients can be exposed to multiple chemical compounds, in the case of our patient for example - cocaine, benzodiazepines and cannabis - and as a consequence present a wide range of symptoms, ranging from manifest neurological compromise with drowsiness and confusion with acute changes that lead to euphoria and agitation, variable cardiovascular compromise with hypertensive crises, tachycardia, bradycardia and/or hypotension, to respiratory depression and coma. It is essential that doctors in the emergency department are able to recognize these variations in signs and symptoms that may not have a clear explanation, suspect this type of polyingestions - according to the context that surrounds the patient and perform a rapid and exhaustive evaluation. to determine the severity of the poisoning.

The management of acute poisoning with benzodiazepines in the context of body stuffer, when exposed to extremely high doses versus frequent poisoning with benzodiazepines in other settings, requires a multidisciplinary approach, with a rapid and accurate evaluation followed by appropriate stabilization and detoxification measures. The main objective is to protect the health and well-being of the patient, minimizing the risks associated with poisoning and providing comprehensive support, with an adequate approach and quality care in the

emergency service, limiting damage and sequelae, seeking an improvement in its prognosis and adverse outcomes.

CRediT authorship contribution statement

Jaime La Rota: Writing – review & editing, Supervision, Conceptualization. **Camilo Nemequén:** Writing – review & editing, Validation, Supervision, Conceptualization. **Laura Narváez:** Writing – review & editing, Writing – original draft, Conceptualization. **Jose Motta:** Writing – review & editing, Writing – original draft, Supervision, Project administration. **Juan Calderón:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Data curation, Conceptualization.

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data Availability

Data will be made available on request.

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