SOS: a silent threat. A case report on paracetamol overdose

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Abstract

Paracetamol, also known as acetaminophen, is a widely used non-opioid analgesic and antipyretic agent. As an easily accessible Over-The-Counter (OTC) medication, the risk of exceeding the maximum daily dosage and resulting in an overdose is significant. Here, we present a case of paracetamol overdose of a 24-year-old male who consumed 15 tablets (9.75 g) of paracetamol given as OTC to relieve his chest pain. The patient was treated with N-acetylcysteine (NAC) and managed symptomatically. This case involves a paracetamol overdose resulting from the patient's inadequate comprehension of the term *Si Opus Sit* (*SOS*), which translates to "as needed". This case highlights the importance of patient counseling in the rational use of drugs.

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Introduction

The Latin expression "*Si Opus Sit*" (*SOS*) means "as needed". It is frequently employed in medical settings, especially when writing prescriptions. If patients come across the acronym *SOS* on a prescription, it means that they should take the drug as needed rather than on a set schedule. When patients need acute symptom alleviation, they should use these medications. Patients' understanding regarding *SOS* is still questionable; they fail to understand what "as needed" means. *SOS* medications are primarily prescribed as over-the-counter (OTC) drugs, including analgesics, antipyretics, antacids, and proton pump inhibitors, among others. While taking medicines as SOS, factors such as the severity of the symptoms, dose, and maximum daily dose are often not considered by the patient. Paracetamol, as an easily accessible OTC, has more tendency to be overused.[1]

Case Report

A 24-year-old male patient was brought to the emergency department of a tertiary care hospital in Bengaluru, Karnataka, India, with complaints of abdominal pain and vomiting and a history of consuming 15 tablets of paracetamol 650 mg (DOLO-650), a total of 9.75 g. The patient had no significant history of previous medical conditions or medications, and he weighed 73 kg.

The patient is an Industrial Training Institute (ITI) graduate working in a private company; he also is a part-time auto driver. The patient is a non-alcoholic, non-smoker with no history of any substance abuse.

The patient had complaints of gastritis associated with chest pain (3-4 days a week); upon consultation with his physician, he got an echocardiogram and electrocardiogram (ECG) done, and no abnormality was detected. He was prescribed a proton pump inhibitor (omeprazole 20 mg).

The patient visited the community pharmacy to buy his prescribed medicine. He asked the pharmacist to lend him medicine to relieve chest pain. He was prescribed omeprazole 20 mg and paracetamol 650 mg (OTC) for pain relief and instructed to take it as needed when he experienced pain.

He experienced symptoms of heartburn and chest pain in the night, and he consumed omeprazole before his meal and paracetamol (650 mg) after meal. Despite being on medication, the pain persisted, prompting the patient to take 15 additional tablets over a period of 10 hours as instructed by the community pharmacist to "take medication as needed".

The patient started to have multiple episodes of vomiting and

severe abdominal pain. He was immediately rushed to the emergency room by his guardian. His vitals showed blood pressure (BP) of 130/80 mmHg, pulse rate of 82 beats per minute, and SpO^2 of 98% on room air. Systemic evaluation reveals the presence of CVS S_1 and S_2, with bilateral air entry confirmed and a soft abdomen exhibiting a positive Blumberg's sign. No abnormalities were detected in the CNS and laboratory values (Table 1).

Based on his history, he was started on N-acetylcysteine IV (9 g in 5% dextrose 500 mL) and ondansetron IV (4 mg). After stabilizing the patient with initial management, a psychological evaluation was conducted, revealing no evidence of any illness. The patient's guardian was asked about behavioral changes, and the evaluation concluded that there was no psychiatric illness or abnormality, confirming it was not a case of suicide.

Symptomatic management was done on subsequent days with IV N-acetylcysteine (6 g in 5% dextrose 500 mL), ondansetron 4 mg, pantoprazole 40 mg, hyoscine butylbromide 10 mg, diclofenac 75 mg, N-acetylcysteine 600 mg, tab vitamin C. He was stabilized with medication and monitored closely and eventually responded to the medication.

Table 1. Laboratory tests (on admission).

Lab parameters	Value
Hb	15.3 g/dL
RBC	4.84 M cells/mm^3
WBC	12.6 K cells/mm^3
Platelet count	3.33 Lak cells/mm^3
PT time	14.2 seconds
Sr. Creatinine	0.89 mg/dL
Blood urea	18 mg/dL
Sr. Sodium	139 mEq/L
Sr. Chloride	105 mEq/L
Sr. Potassium	4.2 mEq/L
Total bilirubin	1.5 mg/dL
Conjugated Bilirubin	0.5 mg/dL
Unconjugated Bilirubin	1.0 mg/dL
AST	28 U
ALT	24 U
Sr. Albumin	4.3 g/dL
Sr. Protein	7.6 mg/dL
A/G ratio	1.30

ALT, alanine aminotransferase; AST, aspartate aminotransferase; PT, prothrombin time.

Discussion

Easy accessibility to OTC medications like paracetamol can lead to unintentional overuse.[2] Paracetamol poisoning is the most frequent reason for liver transplantation in the United States, and the second most prevalent cause worldwide is acetaminophen poisoning. In the US, it is responsible for 500 fatalities, 2600 hospital admissions, and 56,000 emergency room (ER) visits annually.[3-5] Overdoses that are unintentional account for half of these cases. Community pharmacists play a vital role in providing complete education regarding the safe use of such OTC medications. Patients should also be educated regarding approved indications and maximum daily dose alongside potential risks of misuse or overdose. The term "as needed/*SOS*" indicates that a medication should be taken "when required", based on symptoms or specific situations. Patients often misunderstand this instruction and are unaware of the potential risks associated with overdose. In this case, the overdose occurred because the patient misunderstood the "as needed" concept. He took paracetamol whenever he experienced pain without considering the maximum daily dose or time intervals. He was also prescribed a proton pump inhibitor (PPI) for gastritis symptoms. The psychiatric evaluation in this case suggested that the overdose was not intentional (not a suicide attempt). This highlights the important role of pharmacists in providing patient education regarding medication use, especially for OTC drugs like paracetamol.

In order to ensure the safe and efficient use of OTC medications, community pharmacists play an essential role. These are some important suggestions:[6,7] i) appropriate selection: based on medical history and symptoms, pharmacists advise patients on the best over-the-counter medication: they ensure that the selected drug is appropriate and does not interact with any prescription medications the patient is currently taking; ii) label reading: it's critical to carefully read the labels of Over-The-Counter (OTC) medications; iii) preventing interactions: pharmacists provide guidance on potential drug interactions, especially when patients are taking multiple medications; they can also explain the active ingredients, dosage instructions, and any warnings or contraindications; iv) dose and administration: appropriate dose and administration are essential; patients should be able to recognize and avoid hazardous combinations and should be informed of how to take medications appropriately, including when to take them and whether to take them with food; v) monitoring side effects: patients need to be informed about any possible adverse effects; pharmacists can advise people on when to seek medical assistance and what symptoms to look out for.

Conclusions

This patient's case highlights the importance of counseling, vigilant monitoring, and prompt intervention in drug overdose situations. It demonstrates the need for improved patient understanding of medication guidelines to prevent drug-related problems. Additionally, the case emphasizes the necessity of clear communication with patients regarding medication instructions.

The patient, along with the caretaker, was educated in the hospital on the use of medication. Basic OTC medications, including their indications, maximum daily dosages, dosing intervals, and other medication-related information, were provided. The patient was then referred to the general medicine department for further evaluation and management of gastritis.

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