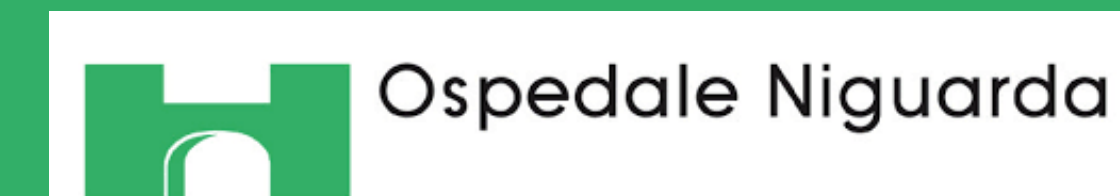


# Acute perchloroethylene intoxication in an elderly woman: a case report



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## Background

Perchloroethylene (PCE) is a colorless, strong-smelling substance commonly used for dry cleaning. Its toxicity is well known, but PCE intoxication is mostly described and studied in three aspects: chronic inhalation exposure, which is a well-known occupational hazard in the dry-cleaning field<sup>1</sup>; acute inhalation, including substance abuse among young people owing to some degree of excitatory effect on the central nervous system (CNS), leading to euphoria<sup>2,3</sup>; and ingestion of contaminated water from dry cleaning and metal degreasing industries leaching into underground water sources<sup>4</sup>. PCE is converted by the liver into trichloroacetic acid and, to a lesser extent, dichloroacetic acid, the latter being considered the primary hepatotoxic metabolite<sup>4</sup>. Reversible kidney damage was shown in humans exposed to acute inhalation of PCE vapor<sup>4</sup>. Acute intoxication by ingestion of nondiluted perchloroethylene is rare in the adult population owing to its strong smell and taste. Very few data are available to physicians managing patients in this situation.

## Case presentation

An 89-year-old Caucasian woman accidentally drank perchloroethylene while visiting her laundry. The exact amount of ingested PCE is uncertain; the patient later described having just a sip before realizing it was not water, but this information was not available at the time of her arrival at the Emergency Room. When she arrived at the ER, approximately 50 minutes after the ingestion, her vitals were as follows: Glasgow Coma Scale (GCS) of 3, SpO<sub>2</sub> 96%, respiratory rate of 34 breaths/minute with a snoring breathing, heart rate of 51 beats/minute, and blood pressure of 115/55 mmHg. The first blood-gas analysis did not show relevant abnormalities. The poison control center found little available information about perchloroethylene toxicity after ingestion, including an estimated long biological half-life (144 hour) and detrimental effects to liver and kidneys. PCE characteristics are summarised in figure 1. The sudden and deep CNS depression led the whole team to presume that a large quantity of PCE had been ingested. A long intensive care unit stay was thus expected, potentially leading to several complications. Moreover, liver and kidney failure were expected. After intubation, transitory hypoxemia appeared and rapidly resolved, while mild hemodynamic instability was managed with fluid resuscitation. Two episodes of supraventricular tachycardia occurred but were promptly interrupted with adenosine. Twelve hours after perchloroethylene ingestion, the patient suddenly woke up and self-extubated. Less than 24 hours after ingestion, she was discharged from the intensive care unit, and 4 days later she was discharged home.

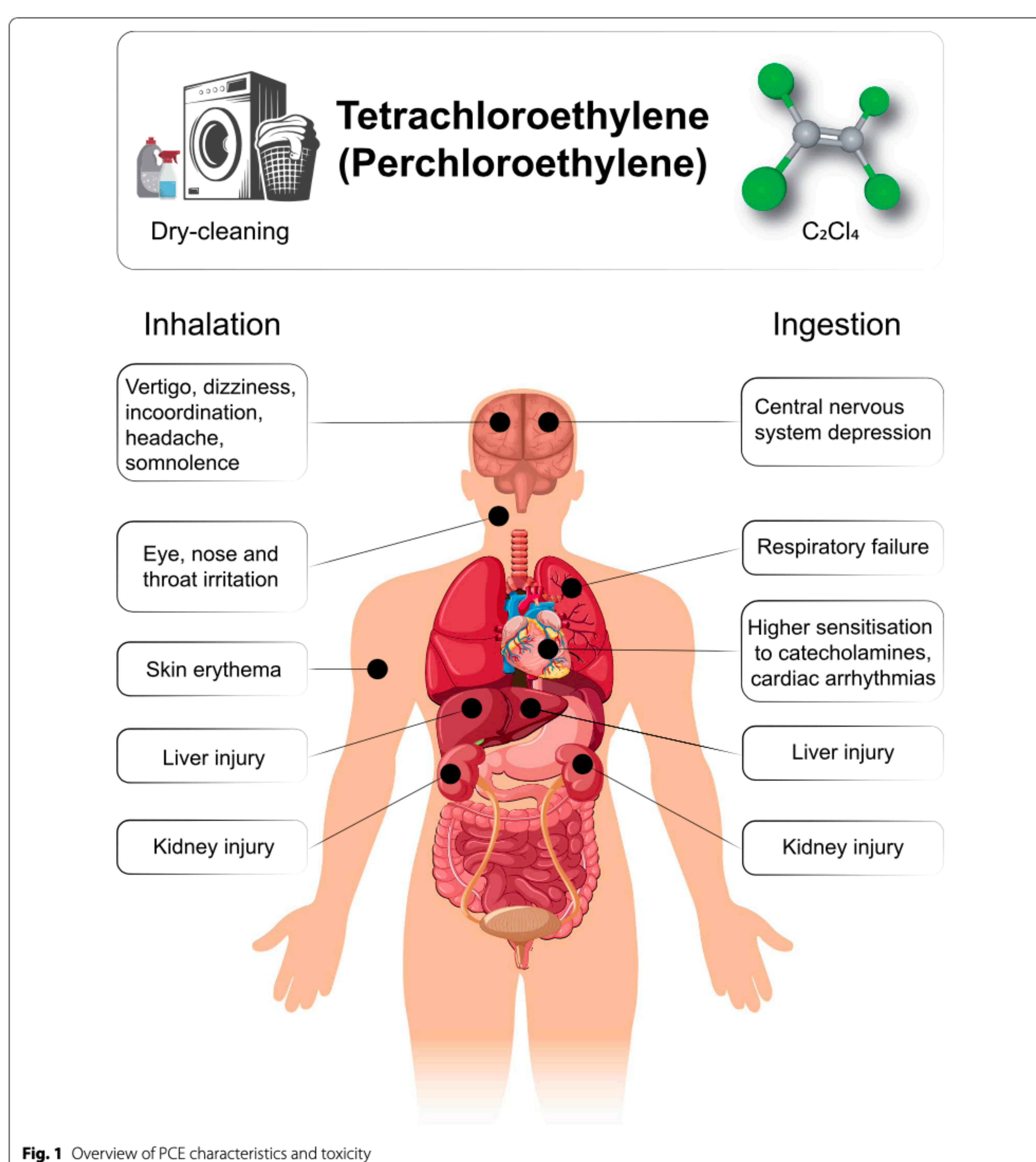


Fig. 1 Overview of PCE characteristics and toxicity

## Discussion and conclusions

The patient drank perchloroethylene from a bottle, which prevented her from smelling it, and owing to its taste, only a small sip was likely drunk. A much larger intake was presumed, given her rapid and profound central nervous system depression. Reality proved all the expectations to be wrong, and the patient had a swift recovery of CNS function and never developed renal or liver injury. Chronic workplace exposure might have enhanced her metabolism of PCE so that the half-life might be reduced. However, given the lack of liver and renal failure, it is conceivable to hypothesize that a small quantity of PCE was ingested. This case was challenging owing to the paucity of information available regarding acute perchloroethylene ingestion and the duration and magnitude of its effect. This led to an ethical dilemma: based on the initial presentation, the advanced age, and the expected scenario, the hypothesis of withholding intensive care treatment was initially discussed. However, as any prognostic evaluation was necessarily based on a very weak scientific foundation, the team finally decided to proceed with a time-limited trial of intensive care treatment. This proved to be a good decision.

## References

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