
A Case of Unusual Drug Screening Results

Brian N. Chang¹ and Michael P. Smith^{1,2*}

1 Beaumont Health System, Royal Oak, MI; 2 Oakland University William Beaumont School of Medicine, Rochester Hills, MI.

* Address correspondence to this author at: Beaumont Hospital–Royal Oak, 3601 W. 13 Mile Rd., Royal Oak, MI 48073. Fax 248-551-0557; e-mail Michaelp.smith@beaumont.org.

CASE DESCRIPTION

A 27-year-old man was found unconscious in his car by police. He was taken to an outside hospital where results of his serum alcohol and initial urine drug screen were reportedly negative. On arrival to our hospital, the patient was awake, partially oriented, and able to follow simple commands. He reported feeling sedated and “loopy,” was unable to remember any events before hospitalization, and was an overall poor historian. He denied illicit drug use, suicidal ideation, homicidal ideation, or any physical complaints. He did express delusions including that he “was an alien with green blood.” Past medical history was significant for schizophrenia with continued auditory hallucinations secondary to noncompliance with risperidone therapy. A review of the medical record revealed a prescription for tramadol.

Vital signs were normal save for borderline tachycardia and the physical exam was noncontributory. The patient’s complete metabolic panel was significant for mild hypokalemia (potassium 3.1 mmol/L, reference interval 3.5–5.2 mmol/L), hypophosphatemia (phosphorous 0.7 mg/dL, reference interval 2.3–4.3 mg/dL), slightly increased aspartate aminotransferase (60 U/L, reference interval 10–37 U/L), and indirect bilirubinemia (3.7 mg/dL, reference interval 0.3–1.2 mg/dL). The initial troponin I concentration was 0.16 ng/mL (reference <0.06 ng/mL) that peaked at 0.21 ng/mL (≥ 0.20 ng/mL suggestive of myocardial damage) approximately 5 hours later. His creatine kinase (CK)³ was 1017 U/L (reference interval 40–230 U/L). Serial electrocardiograms were performed and showed evidence of left axis deviation but were otherwise unremarkable.

The patient was admitted for observation and treated with intravenous fluids. A transthoracic echocardiogram was performed and did not show any evidence of wall motion abnormality. On the second day of hospitalization, he was deemed medically stable with a plan to resume risperidone therapy as an outpatient. His CK had trended downward to 403 U/L by the time of discharge. A urine drug screen was performed upon admission using the Abbott Architect c4000 analyzer (Abbott Diagnostics). The test menu consisted of amphetamines, barbiturates, benzodiazepines, cannabinoids, cocaine, methadone, opiates, and phencyclidine (PCP) screens (Abbott Diagnostics). The only positive result was for PCP (cutoff of 50 ng/mL). Confirmation testing was performed using an Agilent 7890A/5975C GC-MS (Agilent Technologies) in full scan mode. No PCP was detected; however, the presence of 3-methoxyphencyclidine (3-MeO-PCP) (Fig. 1) was confirmed. No other drugs, including tramadol, were detected.

QUESTIONS TO CONSIDER
<ul style="list-style-type: none"> Very few drugs of abuse have a specific antidote (e.g., naloxone, <i>N</i>-acetyl-cysteine); however, why is it still clinically relevant to undertake emergent testing for the many that do not?
<ul style="list-style-type: none"> Excluding administrative and technical error, how might one explain a negative GC-MS confirmatory result performed at an outside laboratory on a screen-positive sample that is nonetheless highly likely to be a true positive?
<ul style="list-style-type: none"> Given the proliferation of NPSs where immunoassay kits are unavailable could high throughput mass spectrometry platforms fill the void?

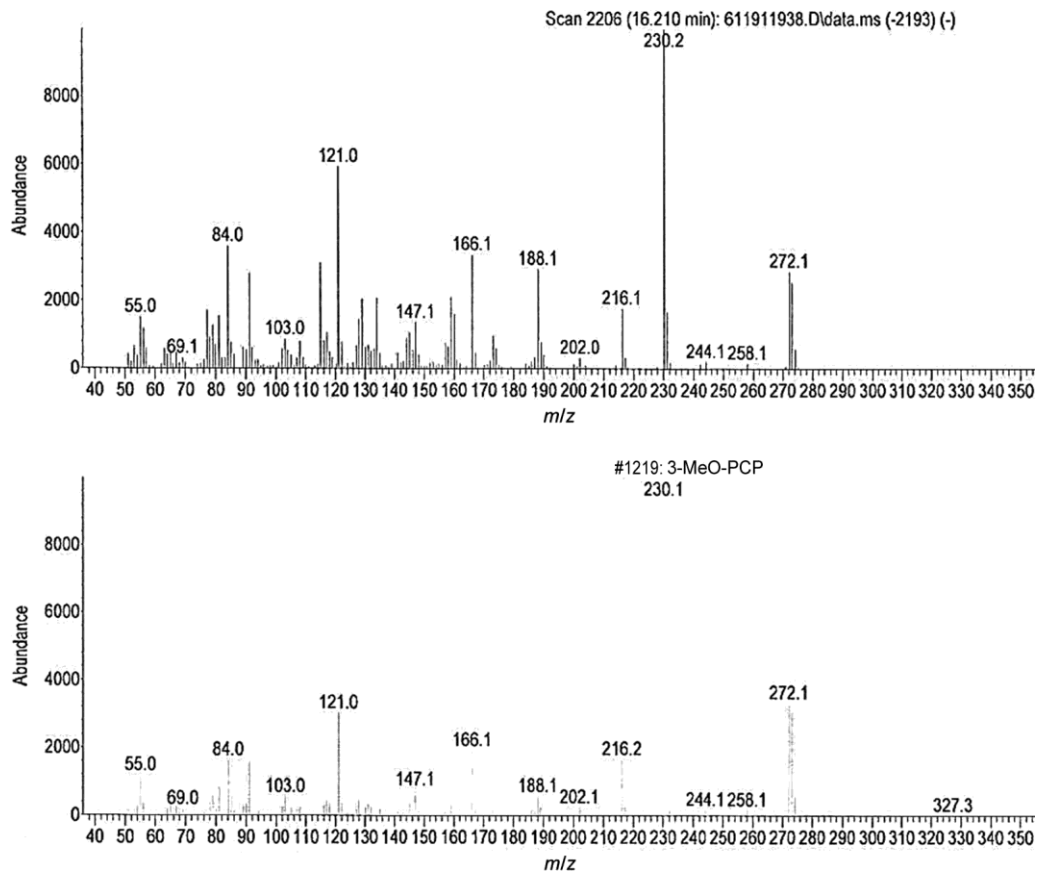


Fig. 1. (Top), Mass spectrum of the patient sample from a peak eluting at 16.21 min. (Bottom), Reference mass spectrum of 3-MeO-PCP.

Final Publication and Comments

The final published version with discussion and comments from the experts will appear in the May 2017 issue of *Clinical Chemistry*. To view the case and comments online, go to <http://www.clinchem.org/content/vol63/issue5> and follow the link to the Clinical Case Study and Commentaries.

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