

Assessment and Management of Toxidromes in the Critical Care Unit

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KEYWORDS

- Toxidrome • Delirium • Antidote • Physostigmine • Flumazenil • Naloxone
- Psychosomatic

KEY POINTS

- In cases of suspected toxidrome exposure, whether it be purposeful, accidental, or iatrogenic, toxidromic presentation that is consistent with the history and physical examination should guide the judicious use of antidotes.
- Although surveys of available agents in the environment (e.g., home, hospital ward) can be useful aids to the diagnostic process, the patient's vital signs and physical examination are the best guides to medical intervention.
- The focus of treatment always should be the patient and the patient's symptoms, not the toxin or the assays that may or may not identify it.
- Good supportive care with prioritized attention to emergent physiologic needs is the cornerstone of management; detailed assessment and reassessment with synthesis of data over time is essential to this process.
- Pharmacologic interventions should be targeted to underlying toxic pathophysiology whenever possible with attention to not exacerbating delirium and minimizing its severity and duration.

INTRODUCTION

Psychiatrists must be concerned about toxic states, primarily because poisoned patients often have made choices that led to the exposure and its consequences, and those choices have mental health determinants and implications. But consulting psychiatrists may play a broader role in the critical care management of patients affected

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by medications and other substances that goes far beyond psychiatric assessment and disposition planning after recovery from overdose. Toxic delirium abounds in the intensive care unit (ICU), where care interventions have as much or more to do with patients' neuropsychological functioning and experiences there as the critical illnesses they suffer.^{1,2} Although psychiatric education offers some expertise in clinical pharmacology to inform differential diagnostic considerations of medication and substance toxicity, formal medical toxicology training for psychiatrists is rare.³

The most important diagnostic factor in uncovering a toxic etiology is the clinician's openness to the possibility of its existence. Therefore, a consulting psychiatrist, already prepared to perform the detail-oriented work of sorting out behavioral manifestations of disease, can be a vital asset at the bedside if also attuned to the role of purposeful, accidental, and iatrogenic exposures in the ICU. This article summarizes the presentation, evaluation, and treatment of toxidromes relevant to the work of acute psychosomatic medicine.

GENERAL APPROACH

Because the brain is the organ most commonly affected by acute poisoning, any patient whose behavior, level of consciousness, or established neuropsychiatric baseline are disturbed should prompt concerns about toxicity.⁴ From the standpoint of central nervous system (CNS) function and diagnosis by the *Diagnostic and Statistical Manual of Mental Disorders*, the presence of delirium is therefore a major reason to suspect a toxic etiology. It is not only the symptomatic management of delirial states that defines much of consultation-liaison (C-L) psychiatry in the hospital setting, but also the medical detective work necessary to ascertain the possible causes of the syndrome.

Often, substance-related toxicity is not considered because of patients' purposeful deception or impairments in communication due to age, language barriers, underlying CNS ailment, or manifestations of the toxic exposure, itself. Physicians also are disinclined to look toward their own interventions as a primary cause for harm, thus further diminishing their attunement to toxic states induced by iatrogeny. Even in medical inpatients with many comorbid conditions that can affect brain function, adverse effects of the drugs used to treat those illnesses are likely to be the most common cause of delirium.⁵ Toxicity from medications or other substances should be considered in patients who acutely develop seizures, coma, respiratory distress, shock, arrhythmias, metabolic acidosis, severe vomiting and diarrhea, or other puzzling multisystem disorders without known etiology.⁶ The possibility even needs to be considered of substances being brought into the hospital and ingested by patients after an episode of care has commenced.

A detailed review of the history and medical record is essential to make sense of the time-course of evolution of a toxic or withdrawal state. Special attention should be paid to the first set of vital signs and physical examination documented, ideally before any medical interventions have been performed that would alter the phenomenology of the presenting problem. Data from emergency medical personnel can be particularly informative. The timing of significant changes in autonomic status, peripheral reflexes, behavior, and cognition also should be noted, with reference to medications given. Then, any subsequent shifts in patterns of autonomic indices and behavior during the hospital course should open the possibility of a new toxic process mediated by either the treatment process itself or withdrawal from discontinued substances.

Certain constellations of signs and symptoms, commonly called toxidromes, may suggest poisoning by a specific class of compounds (**Table 1**). The findings represent direct physiologic manifestations of the pharmacology of the agents in question, thus providing objective clinical data about the status of the patient and what has been

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