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Cocaine Toxicity - Symptoms, Stages and Management

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Abstract

Cocaine is a potent stimulant that is very addictive. You can smoke, snort, inject, or ingest cocaine. Cocaine produces a euphoric altered state of consciousness and increases receptivity to external stimuli. Abuse of cocaine affects people all around the world. Rapid heartbeat, irregular heartbeat, elevated blood pressure, and coronary vasospasm are symptoms of acute cocaine intoxication that require immediate medical attention in order to prevent pathological consequences like acute coronary syndrome, stroke, and death.

Introduction

Cocaine is a stimulant substance that is very addictive. It is a tropane alkaloid derived from the leaves of the South American native coca plant. Cocaine is used as local anesthesia for some surgeries for legitimate medical reasons. However, regular recreational cocaine use is very addictive and changes the structure and function of the brain.

Cocaine has a strong propensity for abuse, which can result in both physical and psychological dependence. A medical professional may take cocaine for a recognized medical purpose. Cocaine powder is ingested through the nose, applied to the gums, or injected directly into the circulation. Cocaine increases the central nervous system's production of norepinephrine, dopamine, and serotonin. Norepinephrine activity raises body temperature, blood pressure, heart rate, and dilation of the pupils.

Cocaine Toxicity

High quantities of cocaine in the body can cause a disease known as cocaine poisoning. It causes potentially fatal consequences and has an impact on both the cardiovascular and central neurological systems. Cocaine overdose typically occurs when

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a user consumes too much of the drug or continuously takes more to keep their dose constant. A high is a condition of altered consciousness brought on by cocaine. The peak continues for over an hour. Users inject enormous doses, which causes toxicity, to sustain this state.

The quantity of cocaine that causes toxicity depends on the specific person and their particular situation. Toxicity is significantly influenced by the method of consumption (oral, nasal, and intravenous). A 20-milligram dose of intravenous (injected) cocaine causes a deadly reaction. The deadly reaction to overdose is often worse when cocaine is combined with other substances like heroin and alcohol. Cocaine dependence and frequent usage decrease the desired effects that users experience and increase toxicity and unfavorable effects. According to studies, cocaine use during pregnancy causes premature birth and placental abruption, which is the early separation of the placenta from the uterus.

Symptoms of Cocaine Toxicity

- Hypertension, which is high blood pressure.
- A changed state of mind.
- A seizure, which includes altered consciousness, uncontrollable muscle twitches, falls, and abrupt eye movements.
- Chest ache and dyspnea
- A bleeding nose
- A very strong sense of impending danger
- Deficits in the brain.
- Elevated core temperature
- Spasm of the blood vessels and loss of distal pulses.
- Unusual perspiration
- Extreme restlessness, disorientation, and agitation.
- The haziness of vision.
- Corneal ulcers and loss of eyesight.
- Diarrhea.
- Vomiting.
- Pain in the abdomen.

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- A severe state of bewilderment accompanied by violent flashbacks and hallucinations that target both people and objects

Stages of Cocaine Toxicity

Stage 1 of Acute Cocaine Toxicity-

- Starts with signs and symptoms of the central nervous system (CNS), such as headache, nausea, mydriasis, vertigo, twitching, and pre-convulsive movements.
- Vascular: High blood pressure and ectopic heartbeats.
- Rapid breathing (tachypnea) in the lungs.
- Hyperthermia (increased body temperature) in the skin.
- Psychiatric - disorientation, hostility, agitation, emotional lability, restlessness, and paranoia (the great fear that other people dislike them, are going to harm them, or will criticize them).

Stage 2 of Acute Cocaine Toxicity.

- Encephalopathy (functional brain damage brought on by toxins), seizures, increased deep tendon reflexes, and incontinence (lack of control over urine flow) are all symptoms of a compromised central nervous system (CNS).
- Cardiovascular system (CVS) - Hypertension, arrhythmias (unusual heartbeat), and peripheral cyanosis (blue fingers).
- Pulmonary - Tachypnea, gasping (inability to breathe), apnea, and erratic breathing.
- Hyperthermia of the skin

Stage 3 of Acute Cocaine Toxicity.

- The deadliest and most hazardous.
- Loss of deep tendon reflexes (areflexia), fixed and dilated pupils, impairment of vital functions, and coma.
- Cardiovascular systems such as cardiac arrest (heart attack), ventricular fibrillation (rapid heartbeat), and hypotension (low blood pressure).
- Pulmonary symptoms such as agonal breathing (abnormal breathing), apnea, respiratory failure, and cyanosis.

Management of Cocaine Toxicity

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For cocaine toxicity, there is no specific antidote (treatment to reverse the effects of poison). As a result, the focus of medical care is on managing the overdose's primary symptoms.

It includes:

1. Patients with cocaine intoxication require urgent medical attention. An ABCDE approach to emergency management should be used (airway, breathing, circulation, disability, and exposure).
2. To protect patients from harm during seizures, they must be kept away from edges and sharp items.
3. Use cold compresses to lower body temperature if someone feels hot (hyperthermia).
4. Control the fever of the patient.
5. It's important to rule out hypoglycemia as the source of neuropsychiatric symptoms.
6. In order to decrease blood pressure and heart rate in individuals with cardiovascular toxicity and agitation, benzodiazepines are the first-line treatment. It is also possible to utilize antipsychotics like haloperidol and olanzapine.
7. Aspirin can be utilized to treat toxicity-related chest discomfort.
8. Nitroprusside and Nitroglycerin can be used to reduce blood pressure. Additionally, they support the recovery of coronary arterial vasoconstriction.
9. Cocaine can be utilized to treat hypertension and coronary artery vasoconstriction by using alpha-blockers such as phentolamine.
10. Hypertension and tachycardia can be managed with the use of the combination drug Labetalol, which contains a non-selective beta-blocker and a selective alpha-1 blocker.

Conclusion

Cocaine toxicity happens when the body receives an excessive amount of the drug. Within minutes to hours of abusing cocaine excessively, toxicity sets in. Hyperthermia, rhabdomyolysis, dysrhythmia, ischemia, cerebral hemorrhage, agitation, psychosis, and seizures are only a few of the symptoms of toxicity. Cocaine poisoning should be treated as a potentially fatal illness and emergency medical care should be given. There isn't a particular

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antidote for toxicity. To stabilize the patient, emergency medical attention is given, and further medications are needed to address other pathological symptoms of a cocaine overdose.

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