

Introduction :

The method of heroin inhalation by heating a solution of powdered heroin on a sheet of aluminum foil and inhaling its vapor is known as “chasing the dragon.” Here, we will describe a unique case of heroin-induced leukoencephalopathy.

Case Description:

A 50-year-old male with a history of known heroin and opioid use disorder was brought to the emergency room after he was found on the floor. As per family the patient had been using more than the usual amount of heroin. Initially the patient was admitted for an occipital condyle fracture. However, during his hospital course, he was found to have worsening mental status and was admitted to the ICU for acute encephalopathy and intubated for airway protection. CT scan of the head showed extensive white matter hypodensities (**Figure 1 A & B**). MRI brain showed diffuse leukoencephalopathy predominantly in the subcortical white matter of the frontal, parietal, and occipital lobes, and white matter tracts of the brainstem and cerebellum bilaterally, compatible with heroin-induced leukoencephalopathy (**Figure 2 A & B**). Lumbar puncture was performed and all other causes of leukoencephalopathy including progressive multifocal leukoencephalopathy were ruled out. Based on history, clinical presentation and imaging findings, the patient was diagnosed with heroine induced leukoencephalopathy. Throughout the hospital stay mental status remained poor and the patient was unable to be weaned off the ventilator and eventually underwent palliative extubation and expired.

Figure 1:

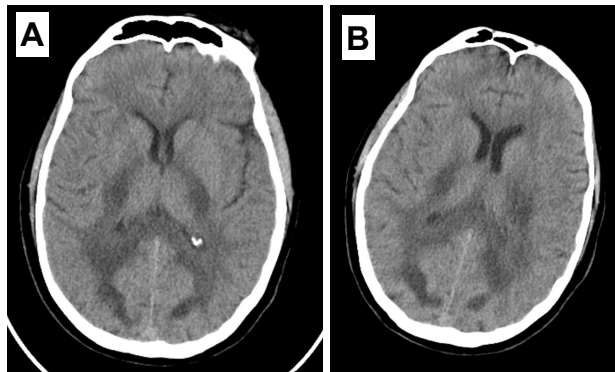


Figure 1 A & B: Computed tomography (CT) scan of head without contrast (axial view) showing extensive bilateral white matter hypodensities.

Figure 2:

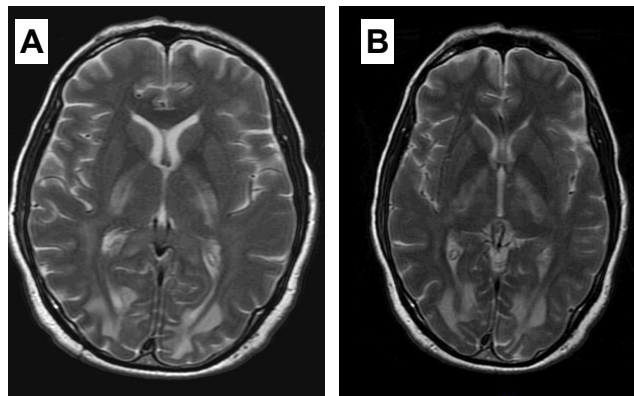


Figure 2 A & B: T2-weighted magnetic resonance imaging (MRI) of the brain (axial view) showing symmetric white matter hyperintensity, compatible with heroin-induced leukoencephalopathy.

Discussion:

The term “toxic encephalopathy” is used to describe brain dysfunction caused by toxic exposure which leads to progressive damage of the white matter of the brain. There are multiple causes including environmental factors, chemotherapeutic drugs, ethanol, cocaine, MDMA and heroin. The diagnosis of heroin-induced leukoencephalopathy (HLE) is clinical and based on symptoms along with an associated history of heroin use and neuroimaging findings. The exact pathogenesis of the disease is poorly understood. HLE involves the cerebellum, posterior cerebrum, and posterior limbs of the internal capsule distribution that is typically bilateral and symmetrical. There is a broad range of presentations, but most typically patients present with confusion, behavioral changes, dysarthria, and cerebellar ataxia, especially in patients who inhaled heroin. Clinical signs and symptoms vary and are based on the area of brain involvement. Mild and moderate symptoms include decreased concentration, confusion, and ataxia while severe symptoms present with increased confusion, delirium and coma. Imaging is key in aiding in the diagnosis, unlike other encephalopathies HLE affects the white matter of the brain symmetrically. Diagnosis is made with suggestive imaging, confirmed heroin use, and positive urine toxicology. The overall prognosis is poor and depends on duration and amount of heroin inhaled. There is no proven treatment however patients are often given antioxidant therapy, including coenzyme Q, vitamin C and vitamin E. Very little data are present to show the effectiveness of these treatments. Heroin is one of the most commonly abused drugs. It rapidly penetrates the blood-brain barrier. Despite the widely practiced use of heroin through different routes, the syndrome is rare and is mainly associated with inhaling rather than injecting or snorting practices.

References:

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