A Hand in Madness: Psychiatric Effects of Lead Toxicity

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Extreme amounts of lead in the body can decouple a person's mind from their experience of reality in the form of psychosis. While the incidence of lead-induced psychosis has declined significantly in the last several decades due to public health measures, it is a treatable cause of psychosis with an otherwise high morbidity.

A 38-year-old male presents to the hospital at the request of his infectious disease physician who found the patient to have critical blood levels of lead. His past history includes ten gunshot wounds sustained at 26 years-old which resulted in a large amount of retained ballistic fragments. Six months prior to presentation, the patient had surgical debulking of some ballistic fragments including disruption of the surrounding fibrous capsule. Blood lead level at that time was found to be 99.4 μg/dL and was subsequently measured to be 70.1 μg/dL at the time of presentation. He endorsed new irritability and worsening headaches in the preceding few months, corroborated by his mother. Blood smear noted absence of basophilic stippling. Poison control was contacted and recommended oral chelation therapy, which the patient refused and deferred treatment for a later date. The patient's family was found to have blood lead levels within normal limits. Subsequent debulking was scheduled but never performed due to patient refusal, but he continued to follow up regularly outpatient. Hematology/Oncology deferred chelation therapy due to clinical stability, known source, and risk of worsening toxicity.

The patient had a first episode of psychosis at 39-years-old. His mother provided collateral history, reporting that in the few months leading to that first episode, patient had increasing paranoia, confusion, homicidal/suicidal ideation, and new drug use including heroin and cocaine. Blood lead level at that time was 55.7 μg/dL. In the intervening years, the patient has been hospitalized for psychosis with increasing frequency. He is typically brought in by police, and his chief complaint is invariably paranoia. He also endorses frequent auditory/visual hallucinations, homicidal/suicidal ideation, and developed hypersexual behavior with demonstrations toward staff. Due to changes in behavior, patient was left by his girlfriend and children who he had been living with for several years, was kicked out of his mother's home due to repeated threats of violence towards her, removed from several shelters, and currently remains homeless without a meaningful support system. He continues to struggle with substance abuse, chronic paranoia, and provider labels of malingering acting as a potential barrier to subsequent care. The patient was eventually diagnosed with schizoaffective disorder.

The case of this patient illustrates the morbidity associated with psychosis due to lead toxicity and the progressive decline in baseline function with chronic lead exposure. It also illustrates the importance of prompt treatment so that the course of disease can be altered and ideally prevented as soon as possible. Although lead toxicity is a rare cause of psychosis, the damage to the personal life of this patient and their family is irreparable and was possibly preventable.