Bilateral Basal Ganglia Hyperintensities on MRI Brain in a Patient with Depression: A Common Safety Hazard

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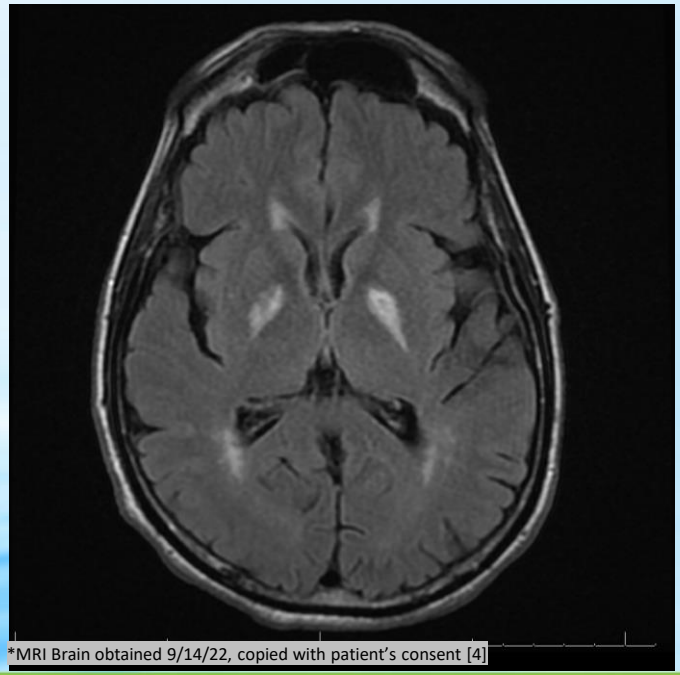
Background:

Psychiatrists often elicit diagnoses from thorough history and collateral info, along with a mental status exam. However, there are times when additional workup may yield answers that the patients do not share with us. This case report explores a patient who came to the ED with altered mental status (AMS) and behavior changes. Imaging revealed a very different story than what the pt had shared – CO exposure. There are >40,000 cases/year of CO poisoning in the U.S, and 30-40% of CO-poisoning victims die before hospitalization [5]. Of those hospitalized, ~2% die, ~10% recover partially, and 23-47% develop delayed neurologic sequelae. This case highlights the importance of 1) doctors creating safe spaces to encourage pts to share info, 2) investigating diagnostics to complete the parts of the stories our patients will not, or cannot, share, and 3) taking all the extra steps necessary to protect our patients and their communities.

Case:

- Pt is a 66M with PMHx of neoplasm of the bladder s/p TURBT, RUE neuropathy, and thrombocytopenia who presented to the ED with AMS and behavior changes. Reports from neighbors in his senior living facility said the pt was "acting strange," and his daughter said he had not picked up his mail in 3 weeks.
- Initial MoCA score: 22/30. CT Head showed bilateral basal ganglia changes when compared to a CT Head obtained one month prior for headache and R-sided numbness.

MRI Brain showed T2 hyperintensities in bilateral globus pallidus. Most concerning etiologies for this finding are: carbon monoxide exposure, methanol/organophosphate/ ethylene glycol ingestion, hepatic encephalopathy, or infection such as CJD [1,2]. Labs were unremarkable. LP showed inflammatory markers with WBC 37 and neutrophils 12%, but all other cultures and labs were negative.



*MRI Brain obtained 9/14/22, copied with patient's consent [4]

Patient Safety and Risk Management:

- Author called the local fire marshal. Given county non-emergency line to report possible CO leak. The fire department was dispatched immediately to run detection tests at the pt's senior living facility. Building was safely evacuated. Police called back hospital staff to inform that CO results were negative at present, and residents could safely return home.
- Pt expressed flat affect & abulia throughout admission, so evaluated for SI to rule out intentional exposure to CO [3]. Pt denied SI, but was diagnosed with MDD, severe, w/o psychotic features and was found to have prior hx of IV heroin use. Eventually, he did admit to having removed the batteries from his CO alarm the month prior when it "went off," for unknown reason.
- Pt was offered antidepressant but declined. He was ultimately discharged home with diagnosis of AMS due to neurotoxicity after his symptoms began to resolve and his apartment was deemed safe. Repeat MoCA 24/30. He was set up with outpatient psychiatric services.

Conclusion:

- Pt was exposed to CO in the last month, though it was unclear if it was intentional or accidental. The pt denied having purposeful CO exposure, so he was not an inpatient psychiatric candidate. Still, the team was able to ensure both pt and the local community were safe. The apartment building and FD continued to work on updating the CO alarms in the old building.
- The pt's source of AMS was identified. The proper treatments were given / resources were offered to help stabilize the pt medically and psychiatrically to ensure pt safety and minimize any future risks.
- Psychiatrists need to not only protect patients in the hospital, but also to practice risk management more broadly and elicit the truth when patients cannot help protect themselves.

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References:

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