



Gas Geyser Syndrome Presented with Seizure and Psychosis

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Abstract

Hazardous effects of flueless gas geysers on the central nervous system is less known but cases are mainly seen in domestic settings. The main culprit behind the pathophysiology is Carbon Monoxide. The cases usually present with cardiac arrest, seizure which can precipitate as epilepsy, Parkinson's feature, cognitive defects and acute onset psychosis. We hope to give an impact on implementing laws against use of gas geyser usage for public safety.

Introduction

In a developing country like India usage of Liquefied Petroleum Gas geysers are used for heating water mainly in rural areas. These are cheaper devices but can cause catastrophic effects on health, mainly if not maintained properly. Our patient is a 28 yr old male who was found unconscious in a bathroom which is the way patients are usually give history in gas geysers syndrome.

Case Presentation

Our patient is a 28 yr old gentleman who presented with seizure-like episodes and acute onset psychosis. He was brought to the ER in a drowsy and confused state. On neurological examination he was moving all four limbs with no focal motor deficit. His vitals were normal with Blood Pressure of 130/90 and a pulse rate of 89 beats per min. His temp was 37 degrees. He was given 1 gram of Levetiracetam in ER and his MRI brain revealed Bilateral symmetrical signal abnormality involving Globus pallidus with mild

restriction diffusion, both hippocampi reveal signal abnormality appearing hyperintense on FLAIR/T2W images with patchy restricted diffusion. To evaluate further Lumbar puncture/CSF diagnostic tapping was done after taking proper consent and clearance, post procedure was uneventful. A CSF autoimmune encephalitis panel was sent which was negative. All blood parameters were within normal limits except for slightly raised ESR and CRP. Electroencephalogram was done as advised and showed intermittent post ictal slowing.

Discussion

Gas geysers have Harmful emissions from combustion of LPG include carbon monoxide (CO), hydrocarbon gasses (HC) and nitrogen oxides (NOx). Carbon monoxide is generated in the exhaust as a result of incomplete combustion of fuel^(1,2,3). These are odorless gasses which are dangerous to humans. It binds quickly to Haemoglobin which is > 200 times the affinity of oxygen. This results in decrease in arterial

oxygen content and can shift the oxyhemoglobin dissociation curve to the left giving hypoxic symptoms of confusion, drowsiness and in severe cases cardiac and neurological symptoms^(3,4).

We presented a case where the patient collapsed in the bathroom unexplained with no history or explanation whatsoever. The cases are usually seen in winters wherein the water is heated by gas geysers which are usually ill-ventilated and small bathrooms⁽¹⁾.

In gas geyser syndrome, carbon monoxide poisoning crosses the alveolar capillary and binds to the heme component^(5,6). Globus Pallidus and Pars Reticulata of Substantia Nigra are the regions of highest iron content in the brain. Carbon monoxide directly binds to these two regions⁽⁶⁾. Periventricular white matter, subcortical white matter, temporal lobe including the hippocampus, thalamus, and cerebellum are the other areas where there is usually brain injury, in case of carbon monoxide poisoning^(6,7,8,9).

Magnetic resonance Imaging and Electroencephalography is usually normal, although when presented with seizure EEG may show some findings with corresponding changes in Imaging. However, the evidence is not a hallmark⁽²⁾.

To diagnose the Gas Geyser syndrome a strong clinical suspicion and a clear history is required. No prior history of any neurological symptoms and suddenness of the presentation can give a clue for the diagnosis^(2,3).

The recovery is almost excellent with no symptoms seen after a few years of treatment.

As seen in our patient in a follow up.

Although rural agencies and government norms have been implemented on its usage, its continued use and cases presenting even today says that the usage should be stopped and strict rules to be implemented^(1,2).

Conclusion

We attempt to draw the attention of physicians to the entity of LPG fume poisoning.

There is also a need to create public awareness

regarding the adherence to guidelines for the installation of using gas geysers⁽¹⁾.

Consent – Taken

Yes

No extra charges taken for the study

NA

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