

## Case Report

# Phenytoin toxicity as a forgoer of schizophrenia like psychosis: a case report

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### ABSTRACT

This is a case report describing the toxicity of phenytoin overdose. It is very uncommon to find an anti-epileptic drug causing psychosis and till date only a few studies have found such a co-relation. A psychiatric patient was admitted in our department of medicine with the complain of ingestion of 30 tablets of phenytoin. On examination he was found to have auditory and visual hallucinations. He was restless and had an ill sustained concentration. First and foremost, thing was to stop the prescribed phenytoin tablets and sedate the patient with haloperidol and promethazine. Then, he was switched over to Levetiracetam 500 mg i.v. thrice daily, Clobazam 10 mg once daily and Risperidone 3 mg twice daily. On investigation we found serum phenytoin level >40 mg/dl. This was sufficient to support our diagnosis as after stopping the drug his symptoms improved. There have been case reports of epileptic patient presenting with psychosis but usually after 10-15 years, unlike our case. In our case this time period was reduced to 12 hours as there was a triggering factor present. So, if a known epilepsy patient develops psychosis, the drug history should be given a big importance and if required serum phenytoin level should be assessed to come to the diagnosis of "phenytoin induced schizophrenia like psychosis.

**Keywords:** Overdose, Phenytoin, Psychosis

### INTRODUCTION

Phenytoin is the most common prescribed drug in India for seizure disorder due to the cost factor.<sup>1</sup> Psychiatric symptoms as an adverse drug reaction (ADR) to phenytoin use has rarely been seen.<sup>2-4</sup>

The development of psychosis related to anti-epileptic drug treatment is usually attributed to interaction between the epileptic brain substratum and the anti-epileptic drug.<sup>2</sup> Also, epileptics are more prone to develop psychosis when compared to general population.<sup>5</sup> Here, we report a rare case of phenytoin induced schizophrenia like psychosis.

### CASE REPORT

A 35 years old unmarried male hailing from Dibrugarh, Assam presented to our medicine OPD with the chief complain of alleged ingestion of 30 tablets of phenytoin the previous night. Patient was absolutely normal 12 years ago when he met an accident causing head injury. After this incidence patient developed Generalized Tonic Clonic Seizure with psychotic features. For the same he was started on phenytoin 300mg once daily at bedtime and was asked to come for regular follow-up in the department of psychiatry at our college. At this dose his symptoms were controlled without any side effect.

Currently the patient developed altered behaviour showing aggression, destructive behaviour and using abusive words. Care takers also complained of decreased sleep, hyperactivity and restlessness.

There was no history of recent fever, any new head injury, disturbance in the level of consciousness or any substance abuse. On examination the patient was conscious and oriented. No abnormality was detected on general physical examination and systemic examination. Mental status examination revealed retardation of thought process, delusion, third person auditory hallucination, visual hallucination along with ill sustained concentration.

For these symptoms he was started on injection haloperidol 5 mg and injection promethazine 25 mg I.V. stat. Phenytoin was stopped and was replaced by injection levetiracetam 500 mg i.v. thrice daily.

Tablet clobazam 10 mg once daily and tablet risperidone 3 mg twice daily after food were started. His investigations included complete blood count, liver function tests, renal function tests, random blood sugar, serum electrolytes, serum Vitamin B12 and folic acid levels.

All results were within normal limits. Then, computed tomography of brain was done which revealed old healed fracture of the frontal bone with encephalomalacic changes

in the frontal and parietal lobe of the brain parenchyma due to resolved hematoma. Serum phenytoin level was sent and was found to be >40 mg/dl (ref: 10-20 mg/dl). On stopping phenytoin his symptoms dramatically improved within 2 days and repeat serum phenytoin levels showed a declining trend. Currently the patient is on levetiracetam and has no psychotic symptoms.

## DISCUSSION

The relationship observed between schizophrenia and epilepsy is of great interest. While this was a clear cut case due to phenytoin overdose, authors still went to check for the vitamin B<sub>12</sub> and folic acid as there are various studies which have shown the cause of schizophrenia like psychosis in patients on long term phenytoin due to vitamin B<sub>12</sub> and folic acid deficiency.<sup>6</sup>

According to study done by Bersani G et al, average interval between epilepsy and psychosis ranges from 10-15 years.<sup>7</sup> Contrary to it, in our case the onset of schizophrenia like psychosis was 12 hours due to the presence of triggering factor of phenytoin overdose.

A case report by Gatzonis S D et al, and Borasi M et al, also support the cause and effect relationship between phenytoin and development of acute psychosis with Naranjo's adverse drug reaction probability scale of 9. In our patient the score was 8 (probable ADR category) Table 1.<sup>2,4</sup>

**Table 1: Naranjo adverse drug reaction probability scale.**

Question	Yes	No	Don't know	Score
1. Are there previous conclusive reports on this reaction?	+1	0	0	+1
2. Did the adverse event appear after the suspected drug was administered?	+2	-1	0	+2
3. Did the adverse reaction improve when the drug was discontinued, or a specific antagonist was administered?	+1	0	0	+1
4. Did the adverse event reappear when the drug was re-administered?	+2	-1	0	0
5. Are there alternative causes (other than the drug) that could on their own have caused the reaction?	-1	+2	0	+2
6. Did the reaction reappear when a placebo was given?	-1	+1	0	0
7. Was the drug detected in blood (or other fluids) in concentrations known to be toxic?	+1	0	0	+1
8. Was the reaction more severe when the dose was increased or less severe when the dose was decreased?	+1	0	0	0
9. Did the patient have a similar reaction to the same or similar drugs in any previous exposure?	+1	0	0	0
10. Was the adverse event confirmed by any objective evidence?	+1	0	0	+1
Total score				8

## CONCLUSION

Thus, the message implied by this case report and the other similar studies suggest that phenytoin toxicity can

manifest itself as a psychiatric symptom. Thus, the treating physician should evaluate for phenytoin toxicity

if such patients develop psychosis and the management should start with stopping the drug as giving anti-psychotic drugs have largely been unsuccessful.

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## REFERENCES

1. Mathur S, Sen S, Ramesh L, Kumar SM. Utilization pattern of anti-epileptic drugs and their adverse effects, in a teaching hospital. Asian J Pharm Clin Res. 2010;3(1):55-9.
2. Gatzonis SD, Angelopoulos E, Sarigiannis P, Mantouvalos V, Ploumbidis D, Siafakas A. Acute psychosis due to treatment with phenytoin in a nonepileptic patient. Epilepsy Behaviour. 2003;4(1):771-2.
3. Logan WJ, Freeman JM. Pseudodegenerative disease due to diphenylhydantoin intoxication. Arch Neurol. 1969;21(6):631-7.
4. Borasi M, Verma P, Gupta SK. Psychosis as harbinger of phenytoin toxicity. Toxicol Int. 2015;22(1):160-1.
5. Nadkarni S, Devinsky O. Psychotropic effects of antiepileptic drugs. Epilepsy Curr. 2005;5(5):176-81.
6. Reynolds EH. Schizophrenia-like psychoses of epilepsy and disturbances of folate and Vitamin B12 metabolism induced by anticonvulsant drugs. Brit J Psychiatry. 1967;113(501):911-9.
7. Bersani G, Iannitelli A, Quartini A, Di Blasi C, Gualdi G, Pancheri P. Patients with epilepsy associated with schizophrenia: a descriptive study of patients investigated with MRI and standard EEG. J Pathol. 2008;14(1):10-5.

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