

Isoniazid Induced Psychosis (Self Harm Behaviour) with Neuropathy & Vitamin B6 Deficiency

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Abstract

Isoniazid induced psychosis (IIP) is well reported with varied clinical presentations. Many hypotheses are available to explain the mechanism of (IIP) but lack conclusive evidence in its favour. The current case establishes neuropathy with vitamin B6 deficiency as a possible cause for IIP warranting early clinician's attention as the condition may be potentially serious & life threatening.

Key Words

Isoniazid, Pyridoxine, Psychosis, Neuropathy

Introduction

Isoniazid related psychiatric disorders are well reported in the literature with varied presentations which include psychosis, obsessive compulsive neurosis, mania, excessive argumentation, euphoria, withdrawn, complex delusions, restlessness, irritability, emotional instability & suicide (1-3).

The mechanism of INH induced psychiatric disorder is uncertain. However, various hypotheses have been proposed like interference with several metabolic processes, deficiency of vitamin B6 predisposing to interference in various CNS neurotransmitters, important for normal psychic functions (4, 5).

Although occurrence of psychiatric illness can be seen in any chronic disorder like tuberculosis, diabetes, hepatic disorders, family and personal history of mental illness, alcoholism but incidentally no such risk factor was seen in our patient. To the best of our knowledge this is first

isolated case report establishing neuropathy with vitamin B6 deficiency as a possible cause for IIP warranting early clinician's attention as the condition may be potentially serious and life threatening.

Case Report

A 36 years old male patient weighing 31 kg who was diagnosed as a case of sputum positive pulmonary koch's (defaulter 3 times) was prescribed DOTS Category-II treatment as per RNTCP guidelines. Patient was hospitalised to ensure compliance. After 3 days of intake of DOTS treatment, attendant reported abnormal behaviour in the patient. The patient complaint of weakness as well as sensory loss in lower extremities and was violent, aggressive and presented with self mutilating, self inflicted injuries on pectoral region and upper part of the arm (*Fig. 1*). There was sudden loss of interest in work, family and clothing for which psychiatric

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Fig. 1 Showing self inflicted wound on pectoral region and upper part of the arm in patient of IIP



Fig.2 Showing Normal CT Scan in patient of IIP ruling out any Neuropathology

consultation was sought. The Hamilton score worked out by psychiatrist was 20 & BPRS (brief psychotic rating score) was 37 on 5th day. On clinical examination patient had pallor & was dehydrated. There was no palpable lymphadenopathy. Chest showed bilateral air entry to be decreased with wheeze and ronchi. CVS- S1S2 normal, no murmur and sinus tachycardia was present in ECG. Per abdomen examination was normal.

CNS examination revealed hypotonia, power grade-IV, reflexes sluggish, pin/needle sensation present, suggesting signs of peripheral neuropathy.

Laboratory Investigations were as follows - sputum for AFB (+ve), Hb - 9.00 gm, Total Leukocyte count markedly raised, Sedimentation rate- 30mm, chest x-ray showed bilateral diffuse opacities. Liver, renal functions, blood sugar, thyroid function, electrolyte levels and lipid profile, were within normal limit. Fundus examination was normal. HIV & STD status was normal.

Ultra-sonography abdomen was normal. Computed tomography- head was normal ruling out and neurological pathology.(Fig-2)

Vitamin B6 level was done on 7th day which were < 1.04 ng/ml (5-30 ng/ml normal range) done establishing neuropathy. Due to institutional and social constrains INH and ethambutol levels could not be done.

The patient had no history of smoking, alcohol or drug abuse. There was no other associated pathology or history of any concurrent drug intake. He had no

personal/family history of mental, psychiatric disorders. No recent disinterest in work, family, food clothes had been reported by the attendants other than after start of DOTS treatment. No history of weight change, insomnia, anxiety or any conflict with family, friends, work place.

Tablet olanzapine 5 mg twice daily, tablet lorazepam 1mg & tablet clonazepam -mouth dissolving 0.5 mg as & when required was started. Tablet pyridoxine 40 mg was also started once daily immediately besides psychiatric and antitubercular treatment on the 5th day. Only INH was de-challenged for short period of 15 days and levofloxacin 750 once daily was added.

Patient's violent, aggressive, self mutilating behaviour improved within 7th day and patient was on follow up. Precisely nothing can be commented on dechallenge and rechallange and its effect on the psychiatric outcome of treatment.

The temporal relationship also favours the possible correlation of INH induced psychosis in the form of self harm behavioural. Thus, the appearance of such psychotic manifestations could not be explained by any concurrent drug, disease, and chemical as well as there was no risk factor which could have made patient vulnerable for psychiatric manifestations.

The ADR was probable as assessed by casualty scale with Naranjo score of six and WHO Uppsala monitoring centre UMC scale (6,7). The ADR was not studied for dose dependent response and was unpredictable and

unusual. However, the co-existence of pyridoxine deficiency makes it difficult to label it as type A or B. Severity of the reaction was assessed using Hartwig ADR Severity Assessment Scale (8) which classified the said ADR into level 4. Where, Preventability assessment was done by using Schumock and Thornton scale (9) which classified the ADRs as preventable. The case was reported to ADRM centre of GMC Jammu.

Discussion

There exist a relationship between self harm behaviours and suicides. Thus, the violent self mutilating behaviour in this patient is potentially serious and life threatening thus requires immediate psychiatric consultation and intervention. The mechanism of this ADR though is not clear but to best of our knowledge for the first time co-existence of neuropathy and pyridoxine deficiency establishes pyridoxine hypothesis of IIP in accordance to Holtz *et al* (4) and Girling DJ (5) clearly.

Pyridoxine deficiency is associated with marked reduction of cerebral serotonin and pineal melatonin. The pyridoxine supplementation may also have an effect on GABA & Dopamine. Therefore underscoring pyridoxine deficiency may exacerbate psychotic behaviour. (10) Low serum concentration of Vitamin B6 has been related to panic and hyperventilation attack and symptoms of depression (11, 12).

The case further underscores the importance of routine as well as selective pyridoxine evaluation in every case of TB on INH containing regimen. The administration of pyridoxine is highly warranted in every such case with prompt psychiatric management. However, the dose of pyridoxine which should be given under such circumstances remains a matter of subsequent research.

Conclusion

Thus, neuropathy with vitamin B6 deficiency may be the possible cause for IIP in the current case

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