

Case Report

Pellagra induced psychosis: a rare presentation

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Received: 10 January 2019

Accepted: 08 March 2019

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ABSTRACT

Pellagra is a nutritional deficiency disease associated with low levels of niacin (vitamin B3). Neuropsychiatric symptoms are rare and are difficult to be diagnosed by clinicians in a timely manner. A 35 years old male was brought with complaints of generalized weakness, decreased appetite and work impairment since past 4 years. Scaly and itching skin rashes have also been present since 3 months followed by hearing voices, suspiciousness and agitated behaviour since one month. On examination, he had pruritic skin rashes over hands which extended over face and neck. His diet comprised mainly of jowar and maize and had history of occasional alcohol use. With an initial diagnosis of psychosis, the patient was started on oral olanzapine. Laboratory and imaging investigations were within normal limits. Dermatology referral confirmed pellagra clinically. The patient was started on injectable multivitamins for 14 days and later shifted to oral multivitamins. Patient showed significant improvement in his skin and neuropsychiatric symptoms. Present case suggests that physicians need to remain vigilant because it is easy to overlook such patients. Pellagra has an insidious onset and psychiatric symptoms appear rare and late in the course when disease is allowed to progress.

Keywords: Dementia, Neuropsychiatric symptoms, Pellagra

INTRODUCTION

Pellagra is a nutritional deficiency disease associated with low levels of niacin (vitamin B3). Nowadays the disease is mainly found in developing countries like China, Mexico, India and African countries where niacin deficient corn is a staple food.¹ It has become rare in the developed western societies, where food is more readily available and diets are, for the most part, diversified. Niacin deficiency resulting in pellagra has varied symptomatology and progression. Strambio wrote some of the earliest treatises on pellagra based on his experience with large cohorts of patients.² In his cohort, 13 patients exhibited muscular spasms, contractures and/or convulsions, four developed tremor, and two

became bulimic. Strambio reported peculiar gait abnormalities (festinatio) in six patients. Neuropsychiatric symptoms are rare and lack of diagnostic testing in some places due to its presumed low prevalence can make it difficult for clinicians to diagnose pellagra as a cause of neuropsychiatric symptoms. In this case report, we describe one such case who presented with psychosis and had clinical symptoms of pellagra.

CASE REPORT

A 35 year old married male, resident of rural Ahmednagar, belonging to low socioeconomic class with no past or family history of psychiatric illness was brought by relatives with complaints of generalized

weakness, decreased appetite and work impairment since past 4 years. Scaly and itching skin rashes have also been present since 3 months followed by hearing voices, suspiciousness and agitated behaviour since one month. The patient had a decreased sleep and appetite since 12 days with self-harm 4 days ago.

Patient was apparently all right 4 years ago, when he started having complaints of generalized weakness, joint pain and decreased appetite. The symptoms gradually increased and in next six months he stopped going to work altogether and would stay at home all day. Along with previous symptoms he started having pruritic skin rashes over hands which extended over face, neck (sun exposed areas) (Figure 1). Since one month, he started feeling suspicious towards aunt and claimed that she was going to harm him in some way. He also said she was sending some evil spirits to kill him. Since 12 days, he was seen making lip movements and hand gestures throughout day as if in conversation with someone. He was also seen to be agitated and aggressive 4 days ago, when he attempted to harm self by trying to burn himself and was brought to our hospital for psychiatric evaluation and management.



Figure 1: Pruritic skin rash in sun exposed areas of the patients.

His diet comprised mainly of jowar and maize. He also had history of occasional alcohol use. He was an unkempt male with increased psychomotor activity decreased reaction time, praying intermittently, reporting mood as fearful and affect was anxious. His thinking revealed delusion of persecution which was well systematized and second person auditory hallucinations of God talking to him and reassuring him. Higher cognitive functions were intact. He had partial insight into his illness. The patient was admitted for diagnostic evaluation and management. He was initially diagnosed as psychosis likely to be schizophrenia.

Patient was started on oral antipsychotic olanzapine 10 mg in divided doses. Hemogram, liver and renal functions and serum electrolytes were within normal limits. Neuroimaging MRI Brain was within normal

limits as well. Dermatology referral was done and diagnosis of pellagra was confirmed clinically. Initial diagnosis was revised to pellagra induced psychosis and patient started on injectable multivitamins for 14 days and later shifted to oral multivitamins. He was receiving a total dose of vitamin Niacin 312 mg per day. Antipsychotic olanzapine was withheld from day three. Patient showed significant improvement and his delusions and hallucinations decreased. On discharge, patient's biofunctions were stable. He had no psychotic features, his skin lesions improved and was receiving only oral multivitamins. On further follow ups, the patient was well maintained, without any of the symptoms returning.

DISCUSSION

Niacin is obtained directly from food or synthesized from an essential amino acid called tryptophan. Two forms of niacin, Nicotinamide and nicotinic acid are components of coenzymes nicotinamide adenine dinucleotide (NAD) and nicotinamide adenine dinucleotide phosphate (NADP). These coenzymes are involved in essential oxidation- reduction reactions in the body and might explain why body tissues with high energy requirements (brain) or high turnover rates (skin, gut) tend to be primarily affected in pellagra. The clinical syndrome named 'Pellagra' by Frapolli et al, was first described in 1735 by Gaspar Casal but only published in a posthumous work in 1762.^{3,4} Known as 'mal de la rosa', the condition was characterized by a typical reddish and glossy rash on the dorsum of hands and feet and around the neck. The concept of dementia associated with pellagra includes a gamut of complaints ranging from organic confusion and related cognitive dysfunctions to affective disorder, psychotic symptoms (such as delusions, hallucinations and paranoid responses) and general behavioural disorganization.⁵

The underlying mechanism of niacin deficiency in the pathogenesis of psychotic symptoms is unclear. Serdaru et al, postulated that it is due to a neuronal insult: a direct cytoplasmatic damage or secondary axonal change.⁶ Analysis of post-mortem examination has revealed chromatolysis notably in the pons.⁷ Penkowa et al, suggested that niacin antagonism is associated with glial degeneration thereby interfering with signal transmission across neurons.⁸ Another study has showed that in schizophrenia there was a reduced sensitivity to the vasodilator effecting of niacin. Since this effect depends upon the release of prostaglandins, this study suggested that schizophrenia may be associated with abnormalities in enzymes, receptors or signal transduction mechanisms affecting the synthesis, release or response to vasodilating prostaglandins.⁹ Puri et al, has also suggested that the non-invasive niacin skin-flush test can be used to show impaired arachidonic acid-related signal transduction in schizophrenia, suggesting that this test could be useful in the diagnosis of schizophrenia.¹⁰

CONCLUSION

This case highlights that physicians need better training in the wide range of medical conditions that can present as neuropsychiatric disorders. They also need to remain vigilant because it is easy to overlook such patients in the course of their daily work of treating large numbers of patients with neuropsychiatric disorders that are not caused by physical illnesses. Physicians, if aware of the wide spectrum of neuropsychiatric presentations, can make an early diagnosis and an appropriate management of this treatable condition can be initiated in a timely manner.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

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Cite this article as: Parikh D, Panse S. Pellagra induced psychosis: a rare presentation. *Int J Res Med Sci* 2019;7:1364-6.