

Research Journal of Pharmaceutical, Biological and Chemical Sciences

Pellagra in A Young Chronic Alcoholic: A Case Report.

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ABSTRACT

Alcohol has diverse and widespread effects on the body and impacts directly or indirectly every system of body including skin. Dermatological manifestations associated with chronic alcoholic are often overlooked. Pellagra is produced by deficiency of niacin. Pellagra often seen in a number of underdeveloped regions, particularly in Asia and Africa, where corn is the main source of carbohydrate and among people with low socioeconomic status. Pellagra causes Dermatitis, Diarrhea, Dementia. The disease is easily treatable. Prompt recognition of the pathognomonic presentations like Casal's Necklace the characteristic dermatitis, neuropsychiatric manifestations are crucial for timely initiation of treatment, without which it may prove fatal. Here we present a case of 30-year-old chronic alcoholic with typical presentations of Pellagra like Casal's necklace, diarrhea and irritability.

Keywords: Pellagra, Casal's Necklace, Chronic Alcoholic

<https://doi.org/10.33887/rjpbcs/2024.15.6.35>

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INTRODUCTION

In the year 1735, Gasper Casal first described *pelle agra* (Italian) i.e., Pellagra meaning sharp or rough skin. Krehl in the year 1945, established that the disease is caused mainly due to deficiency of niacin also called nicotinic acid and vitamin B3 or tryptophan, its precursor amino acid in the diet. Corn is deficient in tryptophan and hence corn-based diet often is the cause. Chronic alcoholism, cirrhosis, carcinoid syndrome, prolonged diarrhea, colitis may also cause the disease. 4 D's of the disease are Dermatitis, Diarrhea, Dementia and Death. Alcoholic patients often present with altered sensorium may be due to delirium tremens or due to encephalopathy. Hence alcoholic patients presenting with any of the 4 D's should be considered for the differential diagnosis of Pellagra. If diagnosed in time, the disease is easily treatable and a life can be saved.

CASE REPORT

A 30-year-old unmarried male from low socio-economic status presented to the casualty with altered mental status, disoriented, irritable behaviour since 2 days & generalized weakness, decreased appetite and diarrhea for 8 days. He was a known case of chronic alcoholic since around 10 years and last intake was around 3 days back. On dietary history patient used to be having predominantly chapatis made of bajra along with rice and curry having pulses.

Patient was admitted to medicine ward suspecting Wernicke encephalopathy and alcohol withdrawal. Patient was started on Inj Thiamine and IV fluids containing Dextrose and was sedated by giving Inj Midazolam. After sedating, the patient was thoroughly examined and was found to have distinct erythematous, scaly, and hyperpigmented lesions around cervical region of typical "Casal's Necklace" pattern and also in the hands (Casal's Gloves) and feet (Casal's Boots), typically on the sun exposed areas.



Figure 1: Casal's Necklace pattern dermatitis Figure 2: Casal's Gloves pattern dermatitis



Figure 3: Casal's Boots pattern dermatitis

Complete blood count, serum bilirubin, blood urea, serum creatinine, serum electrolytes, urine routine and microscopic examination, serum vitamin B12 and folate levels, thyroid function tests, VDRL, stool microscopic examination, electroencephalography (EEG), electrocardiography (ECG), HIV, HBsAg were done. HIV, HBsAg status were negative. However, the presence of persistent diarrhea, and typical pattern rashes on sun-exposed areas heightened suspicion of pellagra. On further lab investigations patient was found to have significantly decreased levels of niacin confirming the diagnosis of pellagra.

On confirming the diagnosis of pellagra, a comprehensive management approach was initiated for managing the symptoms of pellagra as well as alcohol dependency. Patient was started on IV antibiotics, Tab Nicotinamide, Tab Calcium & Vit D3, Tab Chlordiazepoxide, Inj Multivitamin containing all B vitamins including thiamine with adequate intravenous hydration and high protein diet. He was also given topical antibiotics and general skin care with liquid paraffin.

Patient showed significant improvement within one week of starting treatment and completely recovered by 1 month.

DISCUSSION

Vitamin B3 also known as Niacin refers to nicotinic acid and nicotinamide and their biologically active derivatives. Nicotinic acid and nicotinamide act as precursors of two coenzymes, nicotinamide adenine dinucleotide (NAD) and NAD phosphate (NADP), which have pivotal role in numerous oxidation and reduction reactions in the body. Also, in adenine diphosphate – ribose transfer reactions involved in DNA repair and calcium metabolism these are essential. Stomach and small intestine are predominant sites of absorption of Nicotinic acid and nicotinamide. Meat, eggs, milk and beans are rich sources of niacin; although also present in cereals, bioavailability is lower. Niacin is abundant in flour; and since niacin is the non-coenzyme form, bioavailability is excellent.

Pellagra is caused by niacin deficiency, people eating corn-based diets in parts of China, Africa, and India are at risk. Photosensitivity of skin in pellagra is caused due to decreased synthesis of tryptophan metabolite picolinic acid → zinc deficiency → decreased skin levels of the histidine metabolite urocanic acid and possibly also increased levels of the haem precursor 5-aminolaevulinic acid (5-ALA) and photo-reactive porphyrins. Depression is seen due to serotonin deficiency caused by decreased tryptophan availability to the brain. Irritability is caused by 5-ALA and photo-reactive porphyrins. Pellagra although rare can also be found in alcoholics due to poor absorption and subsequent B vitamin deficiencies, inhibiting the conversion of tryptophan to niacin and promoting accumulation of 5-ALA and porphyrins. Pellagra is also found among patients with congenital defects like Hartnup Disease in which there is defect in absorption of tryptophan from intestine and kidney. It can also be found in Carcinoid syndrome patients as there is increased conversion of tryptophan to serotonin.

Generalized weakness, loss of appetite, abdominal pain, nausea, vomiting, irritability are the earlier symptoms of pellagra. This is followed by bright red glossitis. Then in advanced cases, erythematous, scaly, and hyperpigmented rash is seen in sun exposed areas of the skin; the ring shaped rash around the neck is known as Casal's Necklace. Vaginitis and esophagitis also may occur. Diarrhea is seen partly due to malabsorption and partly due to proctitis. Low mood, depression, dementia and occasionally seizure episodes are also seen in pellagra. Hence popularly known, the 4 D's of Pellagra are Dermatitis, Diarrhea, Dementia which if not treated in time leads to the 4th D – Death [1-8].

Treatment of pellagra consists of oral supplementation with 100 – 200 mg of nicotinamide or nicotinic acid three times daily for 5 days.

CONCLUSION

Chronic alcohol use, poor socioeconomic status, gastrointestinal symptoms, altered mental status and characteristic skin findings should raise the suspicion of pellagra, although it is a rare disease nowadays. For a chronic alcoholic presenting with pellagra as in our case a multidisciplinary approach is needed with internal medicine specialist, dermatologist and psychiatrist working together to ensure the best management of the patient.

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