

Case Report



Alpine Scurvy: A Hidden Hunger in Modern Era - A Case Report

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ABSTRACT

Pellagra is a dreadful nutritional disease due to a deficiency of vitamin B3 (niacin). Pellagra is also called "Alpine Scurvy". Pellagra is characterized by a triad of diarrhoea, dermatitis, dementia, and death if left untreated. Although thought to be eradicated in the modern world, Pellagra still remains unnoticed and affects vulnerable populations. The diagnosis is mainly clinical and based on its characteristic triad of symptoms: photosensitive dermatitis, diarrhoea, and dementia. Here we report a case of a 43-year-old male alcoholic who presented with seizures and was later found to be diagnosed with Pellagra based on the above characteristic triad of symptoms. Nicotinamide replacement therapy was introduced with the subsequent resolution of symptoms until complete recovery. A combination of different and complementary strategies must be adopted to combat this disease and improve the ability to recognize it.

Keywords: Pellagra, Alpine Scurvy, Niacin, Alcohol, Nicotinamide.

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INTRODUCTION

Niacin (also known as vitamin B3) insufficiency, as well as its precursor tryptophan, is the root cause of the nutritional illness pellagra. Developing nations today hardly ever witness it^{1,2}.

In addition to nicotinic acid, the name "niacin" also refers to nicotinamide-pyridine compounds, sometimes known as "pellagra preventing factor" compounds. Fish, meat, cereal husks, nuts, milk, eggs, and pulses are some examples of sources³.

Because the amino acid tryptophan is partially transformed by the body into nicotinic acid (60 mg of tryptophan = 1 mg of nicotinic acid), it can be thought of as a provitamin. Due to the low tryptophan content of maize flour and the possibility that it contains a niacin antagonist, maize eaters have experienced pellagra. As a result, the daily requirement for niacin depends on the intake of tryptophan³.

Physiological function: A variety of oxidation-reduction reactions in our body require the coenzymes nicotinamide adenine dinucleotide (NAD) and its phosphate (NADP), with the help of nicotinamide⁴.

Alpine scurvy, or Pellagra, a deadly nutritional disease, is characterized by 4D's: dermatitis, diarrhoea, dementia, and death. Although it is thought to be practically eradicated, it still affects vulnerable populations⁵.

Triad of symptoms:

- **Dermatitis:** Typically, there is erythema that resembles severe sunburn and that develops symmetrically over the body areas exposed to sunlight, mainly the limbs and particularly on the neck, but not on the face. The skin lesions may become vesiculation, cracked, exudation, and infected secondarily.
- **Diarrhoea:** This commonly occurs along with anorexia, nausea, glossitis, and dysphagia and is a sign of a non-infectious inflammation affecting the entire gastrointestinal tract.
- **Dementia:** In case of severe deficiencies, delirium manifests abruptly and dementia develops in cases of prolonged deficits⁶.

CASE REPORT

A 43-year-old male patient, a chronic alcoholic under alcohol intoxication, presented to the emergency department with the chief complaint of seizure, generalised tonic-clonic type, associated with rolling eyeballs, tongue bite, and loss of consciousness for 5- 10 minutes. He had a history of similar episodes of seizure at least 10 times in the last year. But he did not take any regular medicine for that complaint.

The patient had another complaint of red, scaly skin lesions over the face, hands, and feet for the past one year, intermittently with frequent exacerbations during the summer season. (Figure 1, Figure 2, Figure 3)





Figure 1: Casal necklace dermatitis



Figure 2: Pellagra gloves



Figure 3: Pellagra boot

The patient also had a history of intermittent nausea, vomiting, and watery diarrhoea for 5 months. The patient had a history of insomnia and short - term memory loss for the past 4 months.

He had a history of chronic alcoholism for the past 10 years, along with a poor diet.

On examination, the patient was drowsy and dehydrated. A general examination revealed pallor, glossitis, and multiple, well-defined hyper pigmented, erythematous, scaly patches over the face, neck, and extremities. Vitals: BP: 100/60 mmHg, PR: 110/min, CVS: S1S2 heard, BS: bilateral vesicular breathing heard, P/A: soft, CNS: drowsy, arousable; bilateral pupil: 3 mm, reacting to light, moves all 4 limbs.

Lab investigation shows red blood cells ($3.0 \times 10^6 \mu\text{L}$), white blood cells ($8.7 \times 10^3 \mu\text{L}$), haemoglobin (11.0 g/dL), platelet count ($286 \times 10^3 \mu\text{L}$), MCV – 98 fl, random blood sugar (100 mg/dL), urea (27 mg/dL), serum creatinine (0.86 mg/dL), serum bilirubin (0.83 mg/dL), aspartate aminotransferase (20 U/L), Alanine aminotransferase (23U/L), sodium (133mEq/L), potassium (3.7 mEq/L), chloride (102mEq/L). Viral markers were negative, and USG abdomen and pelvis showed fatty liver. CT brain and MRI brain revealed normal study.

Based on the above history and clinical examination findings, a TRIAD of photosensitive dermatitis, diarrhea, and dementia was found. A diagnosis of PELLAGRA secondary to alcoholism or alcohol-related seizures was made.

Initially, the patient was treated with Inj. Diazepam 10mg IV stat, Inj. Thiamine 500 mg IV TDS, and Tab. Diazepam 10mg TDS for the seizure complaint. Then the patient was treated for pellagra with Inj. Nicotinamide 1g IV TDS, Inj. Multivitamin 5 ml in 100 ml NS IV TDS, and Liquid Paraffin TDS for external use only for 14 days, followed by oral Nicotinamide 100mg TDS, Multivitamin Tablet OD, and other nutritional supplements, and advised abstinence from alcohol and sunlight exposure. During the course of

treatment, the patient showed gradual improvement. (Figure 4)



Figure 4: During the course of treatment

After a few weeks of treatment, the patient showed resolution in skin lesions (Figure 5) and other symptoms, and the patient had been symptomatically better.



Figure 5: Resolution of dermatitis over face, neck and hands after few weeks of treatment

DISCUSSION

It wasn't until the early 20th century that pellagra was recognized as an infectious condition. Only in 1917 did Joseph Goldberger succeed in proving that nutritional inadequacy was the disease's primary cause. Proteins and other members of the vitamin B-complex family are frequently deficient in pellagra, a complicated disease⁷. Primary and secondary causes are used to categorise pellagra. Tryptophan or niacin deficiencies in the diet are the primary causes of primary pellagra. Processes that interfere with the metabolism or absorption of tryptophan or niacin cause secondary pellagra. This happens in conditions like long-term drinking, bulimia nervosa, ileocolitis, protracted diarrhoea, Hartnup's disease, and carcinoid syndrome⁸. There are several medications that increase the risk of developing pellagra, including isoniazid, pyrazinamide, hydantoins, ethionamide, phenobarbital, diazepam, 6-mercaptopurine, 5-fluorouracil, chlorambucil, azathioprine, and chloramphenicol⁹. Systemic lupus erythematosus, which frequently affects the malar region rather than the neck and acral regions, is another illness that resembles pellagra¹⁰. The most recognizable symptoms of pellagra are the cutaneous lesions of the disease. They initially manifest as symmetrical erythema on photosensitive areas that may resemble sunburn and, in mild cases, may go undetected. In one or more areas, the lesions become rough and scaly². The three risk factors for pellagra that are most frequently observed are poverty, drinking, and maize consumption.¹¹

In our case, the patient had a known case of chronic alcoholism along with a poor diet and had symptoms of an erythematous lesion and a burning sensation in a sun exposed region. It was the major cause of pellagra, and the diagnosis was made based on the clinical presentation. The clinical features of the dermatitis and the treatment response are typically used to make the diagnosis of pellagra¹². Niacin can be taken orally, at doses of 100 to 500 mg per day, divided into two or three doses¹³. Here, the patient was treated with Inj. Nicotinamide, Multivitamin injections. Relapse prevention is based on dietary recommendations and nutritional counseling that promotes a balanced diet with enough calories to meet the patient's energy needs. In order to include a range of niacin-rich sources, a diet should also be rich in foods like bran, eggs, meat, chicken, fish, legumes, and seeds. It is required to stay away from alcohol¹³.

CONCLUSION

Alpine scurvy is a historically old but not completely eradicated disease, especially in developing nations with ongoing emergencies that affect populations. Our above case report highlights the importance of suspicion in the presence of its characteristic signs and symptoms for the timely diagnosis of this dreadful condition with a simple but dramatic and excellent curative treatment. A careful examination and strong clinical suspicion are needed to prevent missing the diagnosis of Alpine Scurvy or Pellagra, a deadly nutritional disease.

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