Case Series

HIDDEN IN THE RASH - ALCOHOLIC PELLAGRA ENCEPHALOPATHY

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ABSTRACT

Pellagra Encephalopathy is a recognised medical condition due to niacin deficiency. Patients with alcohol dependence invariably have vitamin deficiencies, including niacin. Pellagra Encephalopathy can be challenging to diagnose alongside withdrawal delirium. Diarrhoea, skin rashes, memory and attention deficits, paraesthesia and proximal muscle weakness were noted in four patients diagnosed with delirium tremens. Atypical features such as cognitive and neurological deficits were understood as the presentation of pellagra encephalopathy. The presence of neuro-cognitive symptoms in addition to typical dermatological presentation guided consideration of pellagra encephalopathy comorbid with delirium due to alcohol withdrawal. Subtle neurological symptoms indicative of pellagra encephalopathy may be overlooked in patients with delirium.

Keywords: Pellagra, Encephalopathy, Alcohol withdrawal

INTRODUCTION

Pellagra is a medical condition characterised by its typical rash and a triad of diarrhoea, dermatitis, dementia (delirium) due to the deficiency of vitamin B3 (niacin). Nutritional pellagra is rare in developed countries but remains prevalent in the developing world.[1] More recently, pellagra is seen to be associated with conditions like chronic alcohol abuse, anorexia nervosa, and schizophrenia, where patients may have poor oral intake resulting in the deficiency of niacin and other vitamins.[2] In western countries, cases of pellagra are most commonly reported in association with chronic alcohol abuse.[3] Therefore, in the developing world, where nutritional deficiencies are prevalent, pellagra and its complications are seen among patients with chronic alcohol use. One among the *3 Ds* of pellagra is dementia, which is a misnomer as the description mostly fits one of delirium, with memory deficits.[4] Hence vitamin B3 deficiency can present as delirium or encephalopathy. This poses a dilemma among patients with acute alcohol withdrawal, as alcohol withdrawal, delirium tremens, and Wernicke's encephalopathy can all present with delirium. It is challenging to isolate pellagra encephalopathy in such cases. Pellagra, because of chronic alcohol use, has been referred to as *pseudo pellagra.*[5] *Pellagra sine pellagra* is also a recognised entity wherein pellagra can present without the characteristic rash in patients with alcohol dependence.[6] It might hence be overlooked, which may lead to further morbidity and mortality. We report four patients with alcohol dependence syndrome and comorbid pellagra to

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highlight the challenges in differentiating pellagra encephalopathy from delirium tremens and Wernicke's encephalopathy.

CASE DESCRIPTIONS

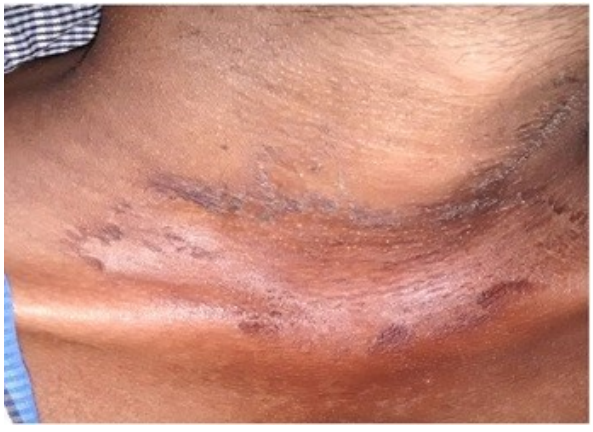
Case 1

Mr K was a 40-year-old married male from a lower socio-economic urban background. He was initially admitted to dermatology to treat skin lesions and transferred to psychiatry as he was found to be disoriented. He had been consuming alcohol for over 20 years, with features suggestive of dependence over the last 5 to 6 years. The average intake of alcohol was 12 to18 units of spirits a day. He developed hyper-pigmented skin lesions on the extensor aspects of his forearm and neck that were noticed around two weeks before the admission. He also had paraesthesia over his palms and soles and developed diarrhoea during hospitalisation.

Physical examination revealed tachycardia, pallor, generalised tremors, and increased sweating. Mr K had hyperpigmented scaly skin lesions with peeling off scales on sun-exposed areas of bilateral forearms and neck (Casal's necklace) (Figure 1). He was disoriented to time, place and person, along with impaired attention, registration and recent memory.

No infective cause was found for diarrhoea. Mr K had instances of urinary incontinence while in the hospital. His liver function (LFT) was deranged, ultrasound scan of the abdomen showed hepatomegaly and grade 2 fatty changes. Confusion resolved over three days, but he continued to have deficits in attention and recent memory over the subsequent five to seven days.

Figure 1. Figure showing Casal's necklace in case 1(Mr. K)



Case 2

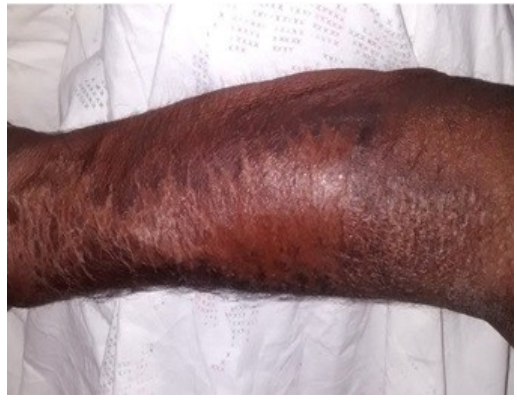
Mr S was a 38-year-old married male from a lower socio-economic status rural background. He had been consuming alcohol for the last 18 to 20 years and in a dependence pattern over the last 12 years. Average use was around 18 units of spirits a day, and over the previous year, his use had increased to 24 to 36 units a day with reduced food intake. In the preceding two years, he had seizures on two instances due to alcohol withdrawal. Additionally, there was a history of excessive fatigue, difficulty standing up from sitting and squatting positions and diarrhoea in the week prior to the initial consultation. He reported numbness and tingling over his hands and feet. His last drink was three days prior to the day of admission.

On initial evaluation, Mr S was found to have tachycardia, generalised tremors, excessive sweating. He had hyperpigmented scaly lesions over his hands and feet over the dorsum and the anterior aspect of his neck (Casal's necklace). Neurological examination revealed proximal muscle weakness with mild wasting of lower limbs and cerebellar signs. He was disoriented to time and place. His attention and recent memory were impaired, and he reported auditory hallucinations.

Case 3

Mr X was a 40-year-old married male from a lower socio-economic rural background. He was admitted with delirium and diarrhoea. He was previously diagnosed to have alcoholic hepatitis. He had been using alcohol for 20 years, with features suggestive of dependence for ten years with an average consumption of 20 to 22 units of spirits a day.

Figure 2. Hyperpigmented desquamating lesions on the dorsum of hand in Case 4 (Mr Y)



On examination, the patient was disoriented, dehydrated and had pallor and icterus. He had scaly hyper-pigmented dry skin lesions on the dorsum of hands and feet. He was found to have tachycardia, generalised tremors and non-tender hepatomegaly. His attention and memory for recent events were impaired. Liver function tests revealed unconjugated bilirubinaemia with deranged liver enzymes. Abdominal ultrasound revealed hepatomegaly.

Case 4

Mr Y was a 40-year-old married male from a lower socio-economic rural background. He was admitted with delirium, tremors and restlessness for a week. He had been using alcohol for the past twenty years, with use suggestive of a dependence pattern in the past ten years. He consumed about 18 to 24 units of spirits a day. He developed erythematous, desquamating rashes on both upper limbs (figure 2) and dorsum of feet over the few weeks preceding admission.

On examination, he was disoriented, dehydrated, and icteric. He had scaly hyperpigmented dry skin on the dorsum of hands and feet. Hepatomegaly was present. He had thrombocytopenia, hypokalaemia and liver function test showed deranged liver enzymes.

Management

All four patients were initially diagnosed with delirium tremens due to complicated alcohol withdrawal. Dermatologist's opinion was sought for the skin lesions and was confirmed to be pellagra. All four patients were managed with tapering dosages of diazepam or lorazepam for detoxification. Initially, thiamine (500mg thiamine in 100 ml normal saline thrice a day) and nicotinamide (300mg per day) were administered parenterally, subsequently changed to an oral formulation. Based on the dermatologist's opinion, topical zinc was used for skin lesions. Reorientation strategies and supportive care were provided according to standard protocols for the management of delirium.

Initial changes were noticed in terms of improvement in delirium and mental status over three to four days. In most of the patients, rash improved over ten days. All patients were reviewed two weeks after discharge. Although cognitive functions improved over the two weeks, the majority of the patients had persisting deficits in memory and attention. Two patients had persistent paresthesia, and one had persistent proximal muscle weakness. In the subsequent scheduled review after one month, the two patients who remained in follow up reported further improvement.

DISCUSSION

Predisposing factors in these patients were that they were all from lower socio-economic status and had been using alcohol in a dependence pattern for at least five years prior to this admission.[7] Additionally, they all presented with delirium and had deficits of attention and memory. They also presented with the characteristic skin lesions of pellagra. In terms of treatment response, all showed improvement in cognitive functions and physical parameters with nicotinamide (niacin). As they also had paraesthesia, incontinence, cerebellar signs, apathy and hallucinations, the possibility of pellagra encephalopathy was considered. As the patients were in acute withdrawal delirium, it was impossible to conclude that they had isolated pellagra encephalopathy.

Among patients with alcohol use, pellagra can often present without the rash (*pellagra sine pellagra*) or with delirium solely. This can result in pellagra encephalopathy being overlooked as an independent diagnosis or as comorbid to delirium tremens and Wernickes' encephalopathy. It is important to consider pellagra as one of the differential or comorbid diagnoses, as it is a treatable cause of morbidity and mortality in such patients.[8]

Niacin functions as a coenzyme in a variety of biological redox reactions in the forms of Nicotinamide Adenine Dinucleotide – Hydrogen (NADH) and Nicotinamide Adenine Dinucleotide Phosphate Hydrogen (NADPH). Alcohol can hinder the conversion of tryptophan to niacin by inhibiting liver tryptophan 2,3–dioxygenase enzyme thus prevents the subsequent formation of niacin precursors. Acetaldehyde which is a by-product of alcohol metabolism, can inactivate pyridoxal 5-phosphate. This enzyme also plays a vital role in the generation of niacin precursors in the kynurenine pathway. Alcohol, through multiple biochemical interactions with key enzymes in the kynurenine pathway, can produce niacin deficiency.[9]

As one of the presenting features of pellagra in patients with chronic alcohol use can be delirium, it is essential to have a high index of suspicion. In a patient with alcohol withdrawal delirium, the emergence of

extrapyramidal signs like cog-wheel rigidity should raise suspicion of pellagra encephalopathy. Other neuropsychiatric features observed in pellagra encephalopathy are myoclonus, cerebellar signs, apathy, paraesthesia, depression, dizziness, hallucinations, seizures, gait disturbance and incontinence.[9] As presented in this series, some of these features were present in all the cases, thereby leading to a consideration of pellagra encephalopathy. Although pellagra's characteristic features like dermatitis were present in this case series, which aided the diagnosis, it is important to note that pellagra can present without the characteristic *3Ds*.

Conclusion

Malnourished male patients with alcohol dependence may present akin to the cases described. In addition to considering thiamine deficiency, it is also important to evaluate other B vitamin deficiencies, including niacin which may present as encephalopathy. A high index of suspicion is key in the diagnosis of pellagra encephalopathy in this cohort. Prompt identification and management of the same can prevent adverse outcomes.

REFERENCES:

1. Pitche PT. Pellagre et érythèmes pellagroïdes. Cah Détudes Rech Francoph. 2005;15(3):205–208.
2. Cresce ND, McManus KA, Sifri CD, Wilson BB. Encephalopathy despite thiamine repletion during alcohol withdrawal. Cleve Clin J Med. 2014;81(6):350–352.
3. Mothukuri J, Chennamsetty S, Bhogaraju A. Pellagra in patient with schizophrenia: a case report and review of literature. AP J Psychol Med. 2013;14(1):50–2.
4. Oldham MA, Ivkovic A. Pellagrous encephalopathy presenting as alcohol withdrawal delirium: a case series and literature review. Addict Sci Clin Pract. 2012;7(1):12.
5. Guthrie RH. A Review of Cases of Pellagra Admitted to the Boston Psychopathic Hospital from 1922 to 1928 with Special Reference to Alcohol as an Etiological Factor. N Engl J Med. 1929;201(9):414–420.
6. Roberts SR. Pellagra: its symptoms and treatment. Am J Nurs. 1920;885–890.
7. Mahajan SK, Aundhakar SC. A study of the prevalence of serum vitamin B12 and folic acid deficiency in Western Maharashtra. J Fam Med Prim Care. 2015;4(1):64.
8. Ginnaio M, Jacobs A. Pellagra in late nineteenth century Italy: effects of a deficiency disease. Population. 2011;66(3):583–609.
9. Badawy AA-B. Pellagra and alcoholism: a biochemical perspective. Alcohol Alcohol. 2014;49(3):238–250.