Case Report - A forgotten Dermatological Disease

Segula D[1,2], Banda P[1], Mulambia C[1], Kumwenda JJ[1],

1. Department of Medicine, University of Malawi College of Medicine, Blantyre, Malawi
2. Malawi-Liverpool-Wellcome (MLW) Trust Clinical Research Programme, Blantyre, Malawi

A 42 year old woman was admitted to hospital with a one month history of progressive forgetfulness, irritability and confusion. There was no history of tremor or confabulation. Reportedly, she also had fever two weeks prior to admission. There was no history of headache, neck-ache or neck stiffness. Further inquiry revealed she had developed rash around her neck and in the distal parts of all four limbs a month prior to the onset of the altered mental status. There was no history of rash involving the mucosae or of having taken any drugs in the period preceding the rash. The guardians also reported that the patient had had diarrhea which was watery and had lasted a week prior to admission. There was no history of vomiting.

She had no history of tuberculosis, diabetes or hypertension. She had been staying in Lilongwe until the illness. She is married with seven children. One child died of an unknown cause. There was no other family member who had been reported with a similar illness. Her husband was employed and worked as a gardener. To generate extra income for her family, she has been distilling kachasu (local spirits) for commercial purposes since 1999. She had a history of alcohol consumption (4 units per day) since 2005.

Reportedly, she was intoxicated most days of the week. She had a 1 pack-year history of smoking.

Her meals mainly consisted of nsima and vegetables. However, she would often neglect herself and fail to eat when intoxicated from alcohol.

On examination, she was irritable and confused. Her Glasgow Coma Score was 14. She had no neck stiffness or tenderness. There was no flapping tremor or stigmata of chronic liver disease.

Her blood pressure was 120/60 mmHg, pulse rate 96/minute, respiratory rate 20/minute and temperature 37.90C. There was a hyperpigmented well-marginated rash around her neck involving most of C3 and C4 dermatomes (figure 1 and 2). She had similar rashes in other sun exposed areas of the body.

These were more pronounced in the dorsal aspects of the hands and feet (figure 3 and 4).

There was a vesicular rash on her upper lip which had begun crusting (figure 1).

Her cardiovascular, respiratory, abdominal examinations were normal. Her initial investigation results on admission revealed that she was HIV negative. Her full blood count was as follows: WBC 3.6 x 109/L, Hb

12.2g/dL MCV 96 fL, MCH 32.3 pg, Platelets 223 x 109/L. The cerebrospinal fluid (CSF) analysis was normal. There was no growth from the CSF and blood after 7 days. She had tested VDRL negative. The renal function results showed creatinine of 0.59mg/dl, BUN of 6mg/dl, sodium of 141 mmol/L and calcium of 2.3mmol/L (corrected for albumin which was normal)

Question

What is the diagnosis?
What is the name of the hyperpigmentation around the neck?

Discussion

Pellagra was first described by a Spanish physician Don Gaspar Casal in 1735. He called the disease "mal de la rosa," because all the affected patients had the typical reddish and glossy rash on the dorsum of the hands and feet. The rash around the neck carries his name: Casal's collar or necklace [1, 2]. Casal noted the disease among the poor of Spain. The disease is characterized by the four D's: Dermatitis, Diarrhea, and Dementia and in some cases Death. The dermatitis of pellagra is characteristically present in sun exposed area. Dementia is evidenced by the progressive forgetfulness.[3] Pellagra results from a systemic cellular deficiency of Niacin (Vitamin B3). Niacin can be directly obtained from diet or synthesized from an essential amino acid tryptophan. It is estimated that 60mg of tryptophan will produce 1mg of niacin in the presence of vitamin B2 and B6. 3 The daily allowance recommended for niacin is 15- 20mg.

Primary pellagra results when the diet is deficient in niacin or tryptophan. The niacin is converted into nicotinamide in the body which is a component of co-enzyme 1 and coenzyme 2. These compounds are involved in glycolysis, protein and amino acid metabolism, pyruvate metabolism, pentose biosynthesis, generation of ATP bonds, glycerol metabolism and free fatty acid metabolism. Secondary pellagra results when there is enough dietary niacin but disease processes interfere with its intake, absorption or metabolism. The secondary causes include (but are not limited to) chronic alcoholism and a variety of chronic bowel disorders. Sporadic cases among alcoholics have been reported.[4, 5] Our patient had a considerable history of alcohol consumption which makes it very likely to have been the cause of the pellagra. Primary pellagra was unlikely in view of the fact that it was absent in the other members of the family who had been taking the same diet. Other causes of secondary pellagra which were very unlikely in our patient but that need consideration in any patient with pellagra include prolonged diarrhoea, anorexia nervosa, tuberculosis of the gastrointestinal system, chronic colitis, regional ileitis, severe ulcerative colitis, hepatic cirrhosis, carcinoid tumour, Hartnup's syndrome and medication: 5-fluorouracil, pyrazinamide, 6-mercaptopurine, isoniazid, phenobarbital and chloramphenicol.[6,7,8,9] Investigations in any patient who presents with confusion should include an HIV test and cerebrospinal fluid (CSF) analysis (unless there is a contra-indication). Our patient tested negative for HIV antibodies. Her CSF analysis was normal. Metabolic causes of confusion need be considered as well. These include hyponatraemia, hypernatraemia or hypercalcaemia. In our patient, the electrolyte results were normal. In view of the reported fever prior to admission, her blood was taken for culture and there was no growth. The reported fever was thought to be most likely due to herpes simplex reactivation as she had herpetic vesicular rash on her upper lips that had already started crusting when she presented.

Clinical Progress

The patient was treated with vitamin B tablets compound, strong. The adult dose for acute pellagra is nicotinamide 100mg orally every 6 hours for several days or until resolution of major features.[3] Each Vitamin B tablet compound ('strong') contains 20mg of nicotinamde. It also contains pyridoxine and riboflavin which are needed in the synthesis of niacin from dietary tryptophan. Therefore the concomitant administration of these is desirable. There was gradual resolution of the confusion. She had no diarrhoea during the admission. Nine days later, she was discharged.

The patient together with her guardians was counselled on stopping alcohol, ensuring a diet rich in protein and niacin, and avoiding sun exposure. Food sources of niacin and/or tryptophan include yeast, eggs, bran, peanuts, meat, poultry, fish, legumes and whole grain cereals. Maize contains considerable amount of niacin but it is in bound form and therefore not readily bioavailable. She was advised to continue to take vitamin B compound, until the resolution of the skin lesions. The nicotinamide was stepped down to 50mg every 8 – 12 hours on discharge.[1] Other supportive management included emollients for the skin lesions.

The prognosis of pellagra is excellent when treated appropriately.[3] On the other hand, untreated pellagra will slowly progress, and lead to death within 4 -5 years. Our patient was scheduled for a follow up visit after one month, but she did not attend.

Conclusion

This is a classical case of pellagra. It is likely that there are many patients with pellagra who are not being diagnosed. During the time in which we have been writing up this case, three other cases have been diagnosed in this hospital. This case report serves to remind us to think of pellagra in patients with any of the component symptoms - dermatitis, diarrhoea or dementia, and especially in patients with all three of these. . It also illustrates the importance of taking a thorough social and dietary history, as these may give the clues to the diagnosis.

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