

DILATED CARDIOMYOPATHY IN A CASE OF PELLAGRA: AN EXTREMELY RARE BUT TREATABLE ENTITY

Prasenjit Halder*, Debabrata Bera, Biswajit Majumder, Deepesh Venkatraman, Monika Bhandari

*College of Medicine and Sagore Dutta Hospital(Department of Pediatrics medicine), Kolkata, India.
Apollo Gleneagles Hospital (Department of Cardiology), Kolkata, Indian
RG Kar Medical College (Department of Cardiology), Kolkata, Indian
RG Kar Medical College (Department of Cardiology), Kolkata, Indian
RG Kar Medical College (Department of Cardiology), Kolkata, Indian
Email: prasenjit0024@gmail.com

Abstract

Pellagra is a nutritional wasting disease attributable to a combined deficiency of tryptophan and niacin (nicotinic acid). The usual manifestations are diarrhea, dementia and dermatitis (the 3Ds), which if left untreated may lead to death. Though electrocardiographic changes are not uncommon. Symptomatic cardiac involvement are rarely seen in those suffering from pellagra. We present a case of pellagra in a female child who presented with the classical skin rash along with cardiac symptoms and echocardiography changes showing dilated cardiomyopathy, both of which responded well with niacin supplements.

Keywords:

Pellagra, dilated cardiomyopathy.

Introduction

Pellagra, first described by Casal in 1735, was endemic in Africa and Asia where staple food is nicotinic acid deficient corn-based diet and related to poverty among refugees or displaced people(1). Classic pellagra is a disease characterized by combined deficiency of the essential amino acid tryptophan and the vitamin niacin (nicotinic acid)(2). Pellagra is characterized by the four classic symptoms (four Ds) – diarrhea, dermatitis, dementia, and death. Other symptoms include anorexia, anxiety, psychosis, cheilosis, constipation, delirium, dermatitis occurring on sun-exposed areas, diminished strength, glossitis, intermittent stupor, melancholia, nausea, paralysis of extremities, peripheral neuritis, stomatitis, weight loss, and vomiting(3-6). Cardiac manifestations and electrocardiographic changes are rarely seen in those suffering from pellagra. Most of cases presents with some electrocardiographic changes and without any cardiovascular symptoms (7, 8). Though some literature, in general, depicts that pellagra can cause dilated cardiomyopathy but no such case reports are published (9-10). Here we report a girl presented with dermatologic manifestation pellagra and her echocardiography revealed dilated cardiomyopathy (DCM), both of which improved with niacin replacement.

Case report

A twelve year girl presented with dermatological symptoms that had begun four weeks earlier. Initially it started as erythematous lesion in sun exposed area. The dorsum of her both hand and foot, around the neck and face were involved with pruritic eruptions, which got worse when exposed to sunlight. Affected area was symmetrically arranged, slightly hyper pigmented and desquamated(Figure 1 and 2). Parents also complain of giddiness, headache, altered sleep pattern, confusion, and irritability for 7-8 days with diarrhea for same duration. On further examination child was mildly tachypnic and heart rate was 120/min, with enlarged liver. A work-up was performed including a complete blood count, electrolytes, liver function tests, B12, folate, antinuclear antibodies, chest X-ray, echocardiography, photopatch testing, methylated metabolites of niacin: N1-methylnicotinamide (NMN) in 24 hour urine were determined. Abnormal laboratory finding was a decreased level of 24-hour urinary N1-methyl nicotinamide of 0.9 mg/day (normal value= 3-10 mg/day). Echocardiography was performed as a routine work up for her dyspnea. Surprisingly it revealed a dilated left ventricle(LV) [LV internal diameter diastolic- 45 mm, well above normal cut off for her age] with LV systolic dysfunction(Ejection fraction- 35%)(Figure 3). We thought it

could be just an incidental finding and probably due to some viral myocarditis previously. Though niacin deficiency has been listed as a cause for DCM, no case report was found. She was given niacin orally at 150 mg daily orally along with other supportive care and dietary modification and counseling. Within 7 days child started improving. Her pellagra associated dermatological symptoms resolved within approximately three weeks. By the third week some residual changes remained (Figure 1 and 2). Echocardiography was repeated after 1 month, as her dyspnea resolved. To our surprise the echo showed almost normal LV cavity size with normal LV systolic function (EF-55%) and dimension. The improvement of LV function can be supposedly attributed to niacin therapy due to the symptomatic and echocardiographic temporal correlation.

Figures:

Figure 1: Skin lesion before (above) and after (below) treatment.



Figure 2 : Face before (left) and after (right) treatment.

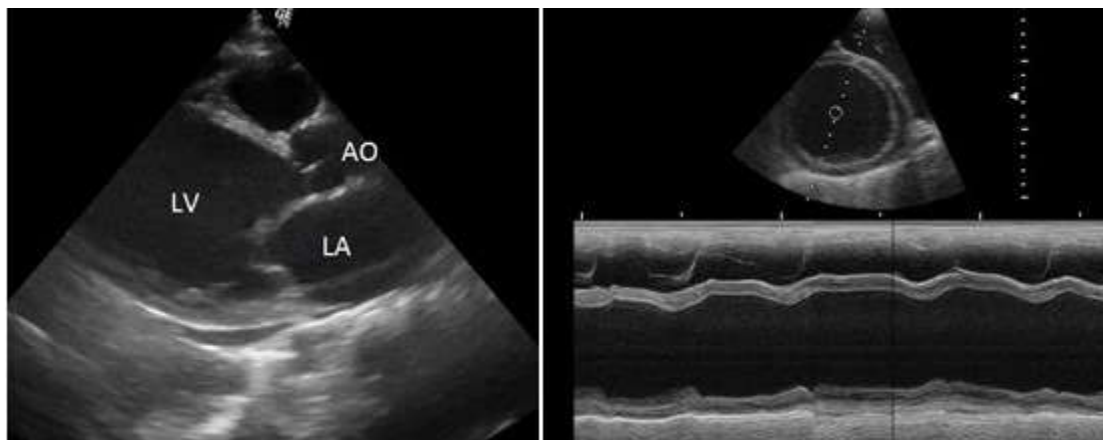


Figure 3: Echocardiography: showing dilated LV cavity with depressed LV systolic function at presentation.

Discussion

Cardiovascular involvement in pellagra is very rare and mostly asymptomatic. Though electrocardiographic changes are not uncommon, symptomatic cardiac involvement are rarely seen in those suffering from pellagra. Electrocardiogram finding may be normal or alteration of the ST segment or T inversion may be seen (7). The Q-T interval and mechanical systole were prolonged in some cases (7). Deformation of the ventricular complex (low voltage or notching) is frequently reported (8). In literature, association of pellagra with dilated cardiomyopathy has been described in general (9-11), but no case report of pellagra with DCM is published. Moreover, this case also shows that the LV dysfunction may be reversible if treated with niacin replacement at appropriate time.

References

1. Mason JB. Lessons on nutrition of displaced people. *J Nutr.* 2002; 132(7):2096S-2103S
2. Bender DA. Pellagra. In: Sadler MJ, Strain JJ, Caballero B, eds. *Encyclopedia of Human Nutrition.* San Diego, CA: Academic Press;1999:1298-1302.

3. Bicknell F, Prescott F. Nicotinic acid. In: The Vitamins in Medicine, 3rd ed. Milwaukee, WI: Life Foundation for Nutritional Research;1953:333-389.
4. Bates CJ. Niacin. In: Sadler MJ, Strain JJ, Caballero B, eds. Encyclopedia of Human Nutrition. San Diego, CA: Academic Press; 1999:1290-1298.
5. Cervantes-Laurean D, McElvaney NG, Moss J. Niacin. In: Shils ME, Olson JA, Shike M, Ross AC, eds. Modern Nutrition in Health and Disease, 9th ed. New York, NY: Lippincott, Williams & Wilkins;1999: 401-411.
6. Groff JL, Gropper SS, Hunt SM. The water soluble vitamins. Niacin. In: Advanced Nutrition and Human Metabolism, 2nd ed. St. Paul, MN: West Publishing Company; 1995:247-252.
7. Feil H. A clinical study of the electrocardiogram and of the phases of cardiac systole in pellagra . American heart journal. Volume 11, Issue 2, February 1936, Pages 173-84
8. Mainzer F, Krause M.The electrocardiogram in pellagra.Br heart J 1940;2(2):85-96.
9. Ashworth M. Cardiomyopathy in childhood: Histopathological and genetic features. The Open Pathology Journal 2010; 4: 80-93
10. Willerson JT, Cohn JN, Wellens HJ, Holmes DR. Cardiovascular Medicine 3rd ed. London: Springer-verlag London limited 2007.
11. Falase AO , Ogah OS . Cardiomyopathies and myocardial disorders in africa: present status and the way forward .Cardiovascular journal of Africa . Nov, 2012:Vol 23, No 10:552-62.