Case Report

Young myocardial infarction: Secondary to vitamin B12 deficiency

Shital Rathod[1*], Asef Sayyed[2], Jayesh Mahale[3], Vijay Gaikwad[4]

[1,2]Assistant Professor, [3]Resident, [4]Associate Professor, Department of General Medicine, Dr. S.C. Govt. Medical College Nanded, Maharashtra, INDIA.
Email: dr.shitalrathod@rediffmail.com

Abstract

Myocardial infarction is a major consequence of coronary artery disease. Apart from traditional risk factors of myocardial infarction, the patient with severe vitamin B12 deficiency is at an increased risk for premature coronary artery disease. However necropsy studies has demonstrated premature CAD in vitamin B12 deficiency associated with Hyperhoomocysteninemia. Here we report a case with serve vitamin B12 deficiency presenting with AMI with mildly elevated homocysteine level. Implying Plasma vitamin B12 level should considered in the evaluation of young people with MI, especially those without conventional risk factors.
Keywords: Myocardial Infarction, Vitamin B12 deficiency, Homocystenine level, risk factors.

[*]**Address for Correspondence:**
Dr. Shital Rathod, Assistant Professor, Department of General Medicine, Dr. S.C. Govt. Medical College Nanded, Maharashtra, INDIA.
Email: dr.shitalrathod@rediffmail.com
Received Date: 23/06/2015 Revised Date: 30/06/2015 Accepted Date: 04/07/2015

Access this article online	
Quick Response Code:	Website: www.statperson.com
	DOI: 05 July 2015

INTRODUCTION

Hyper homocystenemia is an independent risk factor for coronary artery disease and myocardial infarction in young patients[1]. Pernicious anemia is a common cause of Vitamin B12 deficiency, due to lack of intrinsic factor, a protein produced by gastric parietal cells and necessary for absorption of vitamin B12 in the terminal illium[2]. The hallmarks of the disease are macrocytic anemia, neurological symptoms, and atrophic gastritis; however venous and arterial thromboses have been reported as presenting symptoms as well [3,4]. This case reports a young male with acute myocardial infarction with severe vitamin B12 deficiency with subnormal homocysteine level.

CASE REPORT

24 year old male driver, presented with acute onset squeezing type of precordial chest pain of 3 hours duration associated with two episodes of vomiting. There were no accompanying palpitations, dyspnoea and diaphoresis. On admission Pulse rate was 72 beats per minutes regular, good volume, all peripheral pulsation were well felt, Blood pressure was 100/68 mm of Hg, Respiratory rate was 20 cycle per minute, Jugular venous pressure was normal. BMI of 24 kg/sqm2. There was no past history of heart disease nor other conventional risk factors for ischemic heart disease like diabetes mellitus [DM], hypertension, smoking, or illicit drug use. Knuckles are hyperpigmented. Blackish patch over tongue present. No signs of Clubbing, Cyanosis, Edema, Lymphadenopathy are seen, **Pallor** present. Systemic examination did not reaveled any significant abnormality.

INVESTIGATION

Complete blood count shows anemia as HB was 10gm/dl with macrocytic and hyperchromic anemia. He has evaluated for cause of anemia and it revealed both iron and vitamin B12 deficiency. As he has no conventional risk factors for atherosclerosis and young age presentation, his serum Homocysteine and lipoprotein level A (Lp (a)) and vitamin B12 levels were assessed. Vitamin B 12 level (serum cmia) is 48 pg/ml, however homocysteine level is 16 **Mm/L** which was found to be

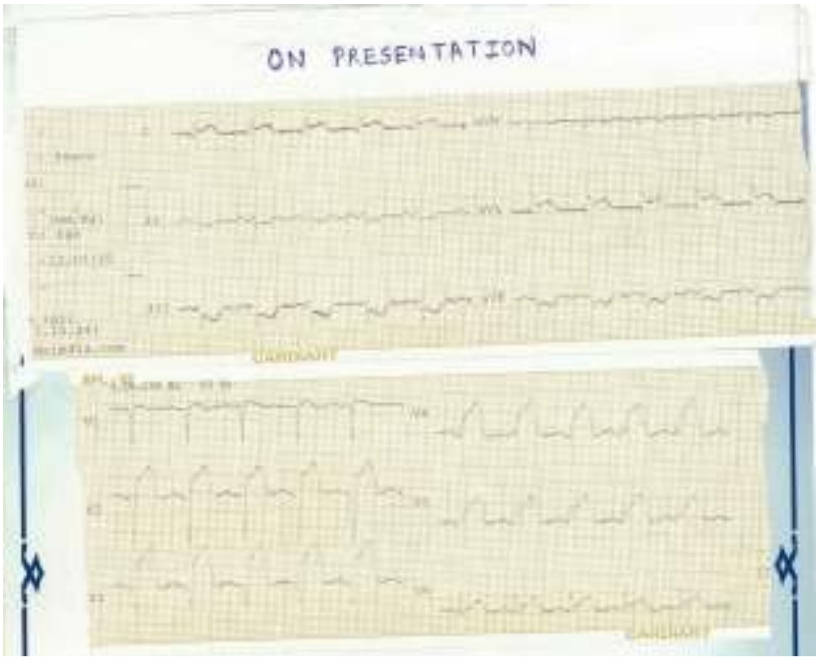
How to site this article: Shital Rathod, Asef Sayyed, Jayesh Mahale, Vijay Gaikwad. Young myocardial infarction: Secondary to vitamin B12 deficiency. *International Journal of Recent Trends in Science and Technology.* July 2015; 15(3): 521-523 http://www.statperson.com (accessed 06 July 2015).

slightly higher than normal limit. Lipoprotein level found to be normal. Erythrocyte Sedimentation Rate, Liver function test, Renal function test, Random blood sugar and Serum electrolyte and Lipid profile were found to be within normal limit. VDRL and HIV status negative. Chest x ray and Ultra sonography were also within normal limits. ECG showed acute antero septal myocardial infarction with ST elevation and significant t-wave inversion in lead I, AVL, v1 to v4.

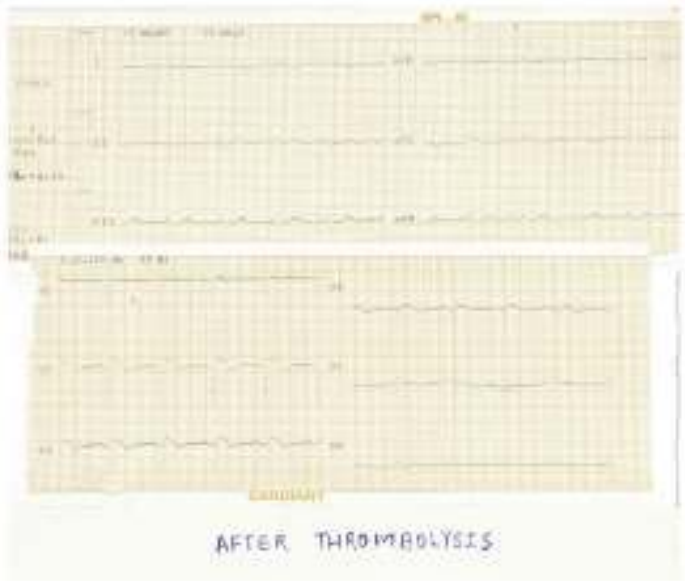
Table 1: Serial cardiac markers

Cardiac enzyme	On Admission	After 6 hrs	After 24 hrs	After 48 hrs
CPK –Nac	253	3820	2260	572
CPK-MB	62	432	178	47
LDH	681	2147	2959	1994
SGOT	40	1260	35	98

2D ECHO: Revealed akinesia of distal antero-septal wall and distal interventricular septum with Ejection Fraction = 35%.



The patient was successfully thrombolysed with streptokinase, low molecular weight heparin and anti platelet agent were started. Post thrombolysis ECG showed reversion of acute changes with the development of waves. He was refereed for coronary angiography and angioplasty. He received vitamin B12 and folic acid supplements.



DISCUSSION

Acute Myocardial Infarction at young age with no traditional risk factors is rare occurrence. In most of the study it is found that Vitamin B12 deficiency with hyperhomocysteinmia is being a risk factor for coronary artery disease. As genetic background and nutritional intake vary in different populations, the vitamin B12 and homocysteine levels varies in different ethnic groups and this may be due to polymorphism metabolism of homocysteine[5] . Multiple epidemiological studies and meta-analysis have shown that even a mild elevation in homocysteine is risk factor for major vascular events [6,7,8,9]. Homocysteniemia is associated with activation of the coagulation system and with thrombin generation, in patients presenting with acute coronary syndrome[10]. Hyperhomocysteinemia increases low density lipoprotein (LDL) cholesterol uptake in the vascular wall and promote vascular smooth muscle growth thereby accelerating atherosclerosis[11]. Our patient was a young man with no conventional risk factors for coronary Artery disease and presented with acute extensive Myocardial Infarction at age 24 of years. This case demonstrates that even mildly elevated homocysteine levels caused by severe vitamin B12 defieciency should be considered in the work-up of acute Myocardial infarction in young people and those without traditional risk factors

REFERENCES

1. Clarke R, Daly L, Robinson K, Naughten E, Cahalane S, Fowler B, et al. hyperhomocystinemia: An independent risk factor for vascular disease. New Engl J Med. 1991;324:1149-55.[Pub Med:2011158]
2. Toh BH, van Driel IR, Gleeson PA. Pernicious anemia. New Engl J Med. 1997; 337:1441-1448.
3. Limal N, Scheuermaier K, Tazi Z, et al. Hyperhomocustenaemia, thrombosis and Pernicious anemia.Thromb Haemostasis. 2006; 96:233-235.
4. Melhem A, Desai A, Hofmann MA. Acute Myocardial infarction and Pulmonary embolism in a young man with pernicious anemia- induced severe hyperhomocysteinemia. Thrombosis J. 2009; 7:5.
5. Ueland , P.M., Refsum, H, STABLER , S.P.,Malinow, M.R., Andersson, A., Allen, R.H. {1993} total homocysteine in plasma or serum : methods and clinical applications. Clin chem..39:1764-1779.
6. D,Angelo A, Selhub J.Homocysteine and thrombotic disease. Blood.1997; 90:1-11.
7. Refsum H, Ueland PM, Nygard O, Vollset SE. Homocysteine and Cardiovascular disease. Annu Rev Med. 1998:49:31-62.
8. Homocysteine and risk of ischemic heart disease and stroke: A meta- analysis. JAMA. 2002:288:2015-2022.
9. Wald DS, Law M, MORRIS JK. HOMOCYSTEINE and Cardiovascular disease: Evidence on causality from meta-analsdis. Brit MED J.2002:325:1202.
10. Al-Obaidi MK, Philippou H, Stubbs PJ, Adami A, Amersey R, Noble MM, et al . Relationship-homocysteine, factor VIIa, and thrombin generation in acute coronary syndrome. Circulation. 2000; 101:372-77.
11. Antonaides C, Antonopoulos AS, Tousoulis D, Marinou K, Stefanadis C. Homocysteine and coronary atherosclerosis: From folate fortification to the recent clinical trials. Eur Heart J. 2009; 30:6-15.

Source of Support: None Declared
Conflict of Interest: None Declared