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A STUDY OF CLINICAL PROFILE OF PATIENTS HAVING MACROCYTIC ANEMIA IN CORRELATION WITH SERUM VITAMIN B12 LEVEL

General Medicine

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ABSTRACT

Background:- Vitamin B12 deficiency is a common cause of macrocytosis that leads to megaloblastic anemia in Indian population with different clinical profiles. But there are many other conditions that can mimic B12 deficiency and can lead to macrocytic anemia.

Objectives:- This study is an attempt to correlate serum Vitamin B12 level with macrocytic anemia, so that it can be treated early and complications like neurological manifestations and circulatory failure can be prevented, and anemia can be typified.

Methods:- In this prospective study data collected from 100 patients, with prior consent, having macrocytic anemia admitted in our hospital over period of 1 year and results analyzed.

Results:- Pure B12 deficiency was the major cause of macrocytic anemia. It was found mainly in lacto vegetarians and in middle age group. Males were more affected than females. Neurological manifestations were seen only in 3.7%. Only 20% of patients were having other causes of macrocytic anemia like liver disease, Hypothyroidism, Zidovudine induced, Hemolytic Anemia, Iron+B12 deficiency.

Conclusion:- We concluded that B12 deficiency, seen mainly in middle aged males and in lacto vegetarians, was the main cause of macrocytosis. But other conditions like Alcoholic liver disease, Non alcoholic fatty liver disease, Hypothyroidism, Zidovudine, Iron+B12 deficiency, Hemolysis can also lead to macrocytic anemia.

KEYWORDS

Macrocytic anemia, B12 deficiency, megaloblastic anemia, lacto vegetarians, Liver disease, Hypothyroidism, Zidovudine, Hemolysis.

Introduction:

Macrocytosis means that the red blood cells are larger than normal, that is mean corpuscular volume (MCV) > 100 femtoliters. [1]As a general rule, macrocytosis occurs when there are problems with the synthesis of the blood cells, as in vitamin B12 or folic acid deficiency. [1, 3, 4]Macrocytic anemia can be classified as megaloblastic and non-megaloblastic. In patients with liver disease and obstructive jaundice, cholesterol and/or phospholipids become deposited on the membranes of circulating red blood cells, leading to larger than normal cells. Alcohol abuse is a common cause of non megaloblastic macrocytic anemia. [18, 19]Out of many other causes of macrocytic anemia, B12 deficiency was most common in Indian population, which leads to megaloblastic anemia (MA). [5,9]The increase in prevalence of MA is also supported by observation that MA accounts for a large number of cases of pancytopenia in many Indian series. Since the major cause of MA in India is nutritional, time should be taken to prescribe a good diet with these vitamins (B12 and folic acid).

Material and methods: This is a prospective study, expanding over the period of 1 year. A prior permission from the Institutional Ethics Committee was obtained. The study was done on 100 patients (>12 years of age) with signs & symptoms suggestive of macrocytic anemia. Detailed clinical history was noted and physical examination was carried out in all patients. Routine hematological investigations in form of complete haemogram; biochemical investigations in form of Renal and liver function test, Serum Lactate dehydrogenase, S.B12 level, radiological investigations in form of chest x-ray, ultrasonography of abdomen, and electrocardiogram were carried out in all patients. The special investigation like bone marrow aspiration, thyroid function test, and serum ferritin level were performed as and when required. Data of each patient was recorded in separate case record form. All the patients were treated according to cause of macrocytic anemia weather megaloblastic or non megaloblastic.Prognosis of patients was reviewed in relation to full recovery or partial recovery.

Analysis of the study was carried out with focus on:

- Correlation of S.B12 level in all macrocytic patients
- Clinical profile of patients with B12 deficiency
- Causes of macrocytic anemia other then B12 deficiency
- Treatment and Management of patients with macrocytic anemia

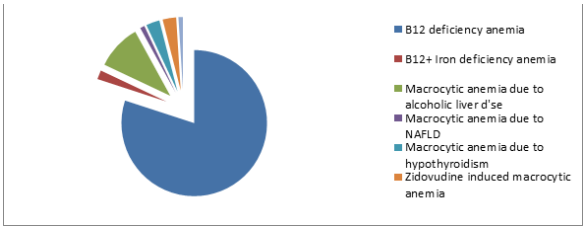
Results: Out of total 100 patients included in study, 80 patients were having B12 deficiency induced megaloblastic anemia while only 20 patients were having macrocytic anemia due to other causes.

Table 1: Correlation with S.B12 level

Total patients	100
No.of patients with B12 deficiency	80
No. of patients with B12 +Iron deficiency	02
Patients with other macrocytic anemia	18

Out of many other causes of macrocytic anemia, B12 deficiency was most common.

Figure 1: Differential Diagnosis



The patients having pure B12 deficiency were grouped into the following age groups: 12-30 years, 31-60 years and >60 years. 24 patients were between 12-30 years of age, 39 patients were between 31-60 years & 17 patients were of 60 or more years. Middle age group people were more deficits in S. B12 level as compared to other groups.

Out of 100 patients included in study 50 males were having pure B12 deficiency & 30 females were having pure B12 deficiency, Which suggest that B12 deficiency is more common in males than in females.

Out of total 82 patients of B12 deficiency, total 77 patients were lacto-vegetarian while just 5 patients were non-vegetarian, suggesting that B12 deficiency is more common in vegetarians.

Figure 2: Age Distribution

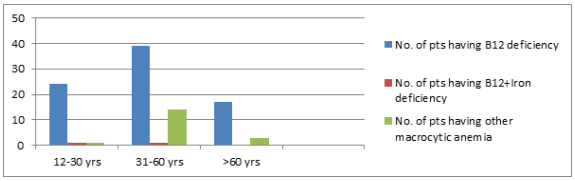


Table 2: Gender Distribution

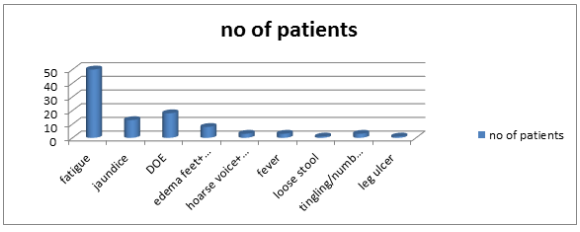
GENDER	MALE	FEMALE	Total
No. of Patients having B12 deficiency	50	30	80
No. of Patients having B12+Iron deficiency	1	1	2
No. of Patients having other macrocytic anemia	18	------	18

Table 3: Diet

DIET	No. of patients with B12 deficiency
Lacto-vegetarian	77
Non-vegetarian	5

Out of 100 patients of macrocytic anemia most patients (50) presented with fatigue/malaise, only 3 patients were presented as SACD (subacute combined degeneration), 13 as jaundice, 18 as DOE (dyspnea on exertion), 8 with edema feet, 3 with horse voice & 3 as fever, one as diarrhea and 1 was presented as leg ulcer. So, neurological manifestations were rare in our study.

Figure 3: Clinical Presentation



Discussion:

In present study the clinical profile of patients with macrocytic anemia was studied in our hospital. Among the 100 cases 80 patients were having B12 deficiency induced megaloblastic anemia. This finding is consistent with study article on prevalence of B12 and folate deficiency in India, which showed that B12 deficiency, is very common in Indian population. [5,9]

Out of 100 cases 39 patients were between 31-60 years, so middle age group people are more deficit in S. B12 level as compared to other groups. This finding is consistent with other study published in NCBI done on Chinese people. [11,12,13]

Out of 100 patients included in study 50 males having pure B12 deficiency, which suggest that B12 deficiency is more common in males than in females. [12, 13] which is consistent with -the study published in NCBI done on Chinese people -the study held in KEM hospital, Pune, conducted on middle class men, showed that 81% were B12 deficit.

Out of total 82 patients of B12 deficiency, total 77 patients were lacto-vegetarian while just 5 patients were non-vegetarian. This is consistent with CRISIS study, showed that 95% patients from study were lacto-vegetarian. [8]

Out of 100 patients of macrocytic anemia most patients (50) presented with fatigue/malaise, only 3 patients were presented with neurological manifestations, and this is consistent with study at KEM hospital, Pune showed that 81% of middle aged men with malaise were B12 deficit. [1, 15]

So, as a cause of macrocytic anemia, S.B12 deficiency was the most common in our study, while other causes for macrocytic anemia were Alcoholic liver disease, Non alcoholic fatty liver disease, Hypothyroidism, Zidovudine, Iron+B12 deficiency, Hemolysis.

In our study, there was no any mortality. All patients were discharged either with full recovery or with partial recovery.

Conclusion: In our study 80% patients were having macrocytic anemia due toB12 deficiency. Out of these B12 deficit patients, majority were middle aged males.Vegetarians are lacking vitamin B12 in diet and so B12 deficiency is much more common in lacto-vegetarians than in non-vegetarians. Fatigue was the most common presenting complain followed by Dyspnea on exertion & jaundice.Out of 80 patients of B12 deficiency, only 3.7% were developed neurological manifestation in form of SACD.

Acknowledgment: The completion of my study brings me the time to express my sense of obligation.

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