

# Megaloblastic anemia presenting as pyrexia and thrombocytopenia

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## Abstract

Megaloblastic anemia due to folic acid and vitamin B12 deficiency is a rare cause of pyrexia and thrombocytopenia. We report the case of a patient who presented with fever, loose motions, and thrombocytopenia who had non specific ileitis and colitis with sub acute small bowel obstruction with probably small intestinal bacterial overgrowth as a cause of vitamin B12 and folic deficiency. The patient responded well to the treatment with vitamin B12 and folic acid supplementation.

## Introduction

Megaloblastic anemia is reported as a rare but treatable causes of fever of unknown origin. Increased activity of bone marrow and defect in oxygenation to temperature regulatory area are the proposed mechanism. Megaloblastic anemia should be considered in any patient who present with pyrexia and thrombocytopenia.

## Case Presentation

A 27 years female patient presented with fever, loose motions and decrease appetite of 15 days duration. She had no history of worm infestation, was taking mixed diet and had no past history of tuberculosis, patient give history of alternate diarrhea and constipation.. on clinical examination patient was thin built, slightly emaciated with weight of 30kg. Her vital parameters are normal. She was having fever of 102 degree Fahrenheit, was pale and had icterus and nuchal pigmentation. Her systematic examinations were normal. Her complete hemogram revealed, pancytopenia and thrombocytopenia (table 1); peripheral smear showed macrocytes and hypersegmented neutrophils and platelets were on

lower side of normal. Her serum bilirubin and serum aminotransferase were mildly deranged, but renal functions were normal. Her widal test, blood and urine culture were all negative. Her stool examination was normal patient continued to have fever inspite of receiving antimalarials and antibiotics. Thus her provisional diagnosis of fever of unknown origin was entertained. Her ANA, DsDNA and CRP were normal. In view of macrocytic anemia and pancytopenia her vitamin B12 level and folic acid levels were done. Her vit.B12 level were 108pg/ml (240-900pg/ml) and folate level were 1.2mcg/1(4-2mcg/1). Her total proteins were reduced slightly with serum albumin level of 2.9gm/dl. As the patient had history of alternate diarrhea and constipation, her barium studies were done, which revealed multiple dilated and narrowed jejunal and ilial segments and loops with possible small bowel obstruction. Patient underwent colonoscopy which showed multiple aphthous ulcer from caecum till rectum. Biopsies from terminal ileum and colon showed non specific ileitis and non specific colitis with no evidence of tuberculosis or malignancy. Patient was started on, refaximine 400mg thrice daily and intravenous vit B12 1500mcg daily and oral Folic acid 10mg daily. On 4<sup>th</sup> day of this treatment patient become afebrile with improvement in her hemogram. Refaximine was stopped after 2wks and vit B12 dose was tapered to twice weekly. Patient was then started on probiotic

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therapy. She did well and was discharged on maintenance dose of vit B12 and folic acid, on follow visits her hemogram remain stable and she gained considerable weight.

**Table no. 1: Serial hemogram before, during and after treatment.**

Parameters	On admission	1 <sup>st</sup> wk of admission	2 wks of treatment
Hb (gm%)	7.6	6.4	11.3
TLC (cells/cumm)	3000	2100	6900
DLC	-	-	-
Polymorphs	25	19	41
Lymphocytes	73	81	51
Eosinophils	01	00	05
Monocytes	01	00	03
Platelets (1.5-4 lacs)	95000	75000	266000
MCV (80-100fl)	110.4	113.7	88.2
MCH (26-34pg)	31	32	37
MCHC (31-37gm/dl)	33	32.6	42
PCV(37-50%)	22.8	20.5	47
S. Bilirubin	2.7	2.1	1.4
SGPT	100	84	32
S. vitB12 (240-900)	108pg/ml	-	310pg/ml
S. folic acid	1.2mcg/1	-	5.2mcg/1

**Discussion**

Pyrexia and pancytopenai as a feature of megaloblastic anemia has been described previously in literture, and occurs in about 40% of patients with Megaloblastic anemia caused by either deficiency vitB12 or folic acid or both (1,2,3,4). The mechanism of fever in megaloblastic anemia is not exactly known, but has been attributed to some defect in the temperature control mechanism of brain or to poor oxygenation of the temperature regulating area secondary to vitaminB12 or folic acid deficiency (2,3,6). Another proposed theory is that Megaloblastic bone marrow changes leucopoiesis and thrombopoiesis (1,4). This increased activity of bone marrow may lead to pyrexia, but the mechanism of how fever is induced by overproduction of marrow is however unclear (1). The level of pyrexia usually correlated with the degree of anemia and usually take 2 to 4 days to reach to normal (1,3)

Megaloblastic anemia can be caused due to malabsorption of vitamin B12 or folic acid, which could occur in localized lesion of jejunum and ileum(6).

Regional enteritis of Chron's disease involving jejunum and ileum, non specific iliocolitis ofUlcerative Colitis and small bowel bacterial overgrowth may lead to malabsorption of vitaminB12 and folate leading to Megaloblastic anemia (6,7.8.9). This type of malabsorption syndrome may be postulated as a probable cause of Megaloblastic anemia in our case.

Patient presenting with fever with pancytopenia are usually treated unnecessarily as febrile neutropenia with broad spectrum higher antibiotics. Although all these feature could be the manifestation of Megaloblastic anemia a rare but cheaply treatable cause of pyrexia. Thus measurements of vit.B12 and Folate should be considered in patients of pyrexia of unknown origin, with feature of Megaloblastic anemia after ruling out infectious, inflammatory and endocrine causes (1,2). However if fever persist even after therapeutic doses of B12 And folate, another etiology of fever should be suspected (1).

**Conclusion**

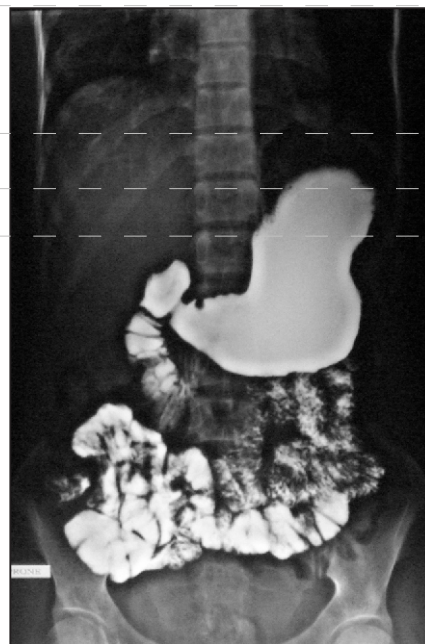
Megaloblastic anemia is rare but a known and treatable

cause of pyrexia after ruling out infective, inflammatory and endocrine causes It should always be considered as differential diagnosis in patients with pyrexia, anemia and pancytopenia. Measuring the levels of Vit.B12 and folic acid and a trial of treatment based on their levels are cornerstone for diagnosis and cost-effective therapy and thus obviate need for further investigation and unnecessary costly treatment modalities. Once diagnosed to be Megaloblastic anemia, one should always search for causes of vit.B12 and folate deficiency and should also treat them.

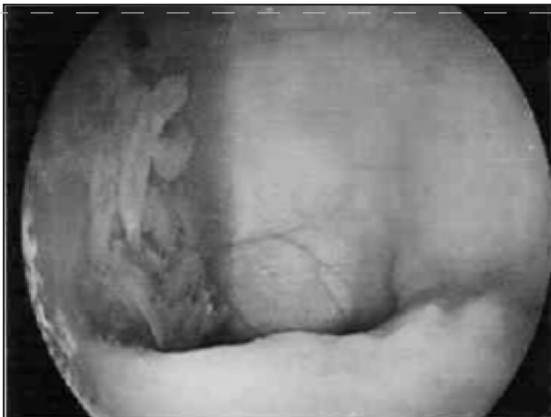
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Barium study showing dilated segments and loops of jejunum and ileum ? Partial small bowel obstruction.



Colonoscopy showing Multiple colonic Aphthous ulcers

