



# ALWAYS EXCLUDE THE REVERSIBLES: VITAMIN B12 DEFICIENCY MIMICKING ACUTE LYMPHOMA

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## Introduction

Vitamin B12 deficiency can cause extensive hematologic alterations such as pancytopenia and hypercellular bone marrow with blastic differentiation. These dysplastic changes can sometimes be so profound that they mimic hematological malignancies like lymphoma or leukemia, leading to extensive workup and aggressive treatment measures.

## Case summary

37 year old female without any significant past medical history apart from GERD presented to hospital with complaints of dull aching abdominal pain for a week, loss of appetite and fatigue for 3 months with profuse sweating without fever or night sweats along with history of heavy menses for 6 months. She had an intentional weight loss of 60 pounds in 6 months. Underwent basic lab workup at PCP and was sent to the hospital for further workup.

She denied drinking alcohol, smoking or abusing drugs.

Her labs revealed pancytopenia with hemoglobin of 6.6 g/dl with MCV of 105, leucopenia 3300/ul and thrombocytopenia 78,000/ul. Her blood counts 6 months prior to this presentation were normal. Peripheral smear had anisopoikilocytosis, occasional teardrop shaped cells, pencil cells and normal neutrophils, no blasts or immature cells.

Thyroid panel and autoimmune antibody panel was negative. Intrinsic factor antibodies were positive.

Endoscopy was done and didn't reveal any abnormalities except chronic gastritis, H Pylori was negative.

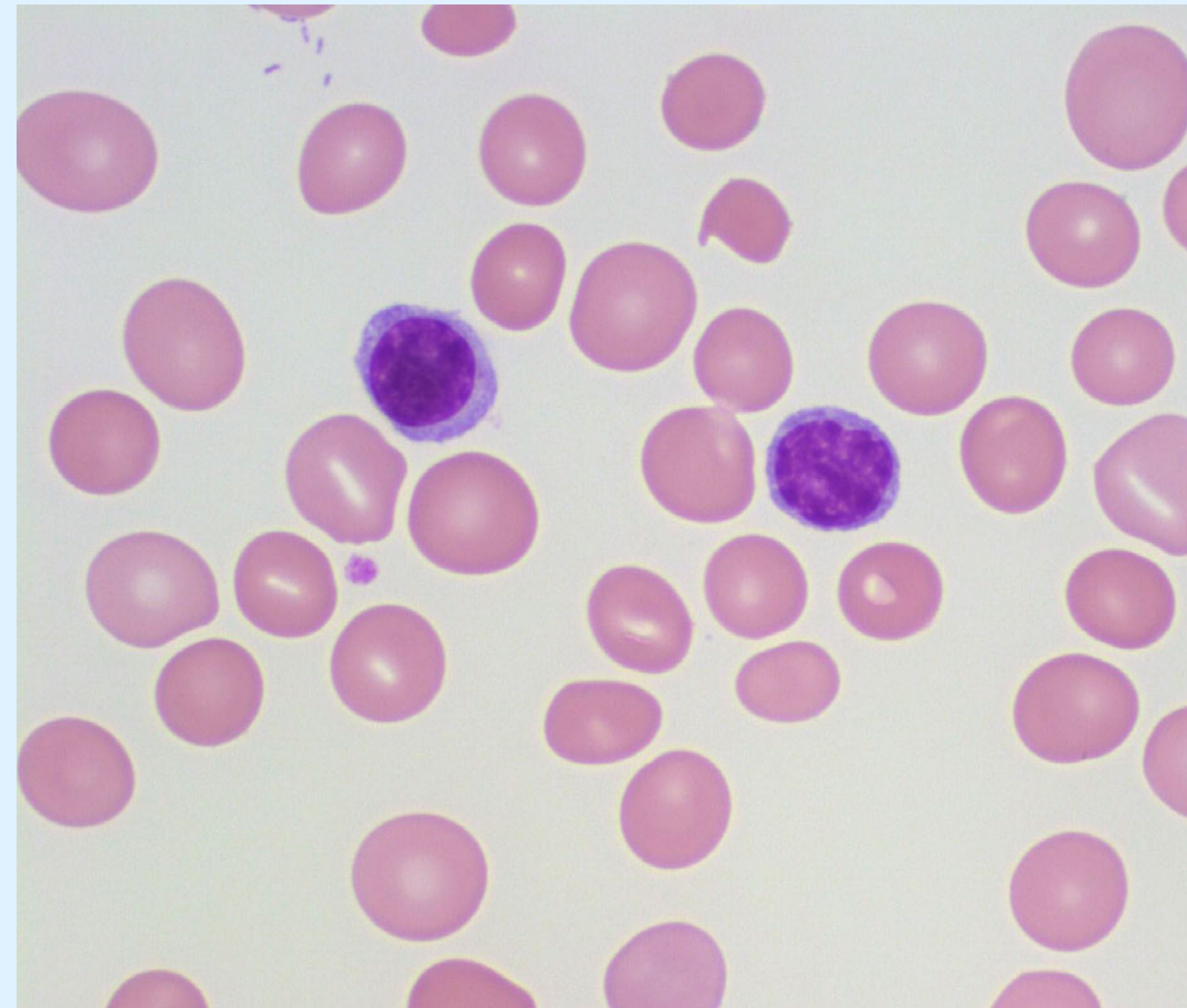
## Course of treatment:

Hematologist deferred getting a bone marrow based on the clinical picture and started on Vitamin B12 injections IM 1000 mcg daily and then weekly.

Labs done in 3 months revealed normal Hb 12.4 g/dl, leucocyte 7000/ul and platelet count 299,000/ul.

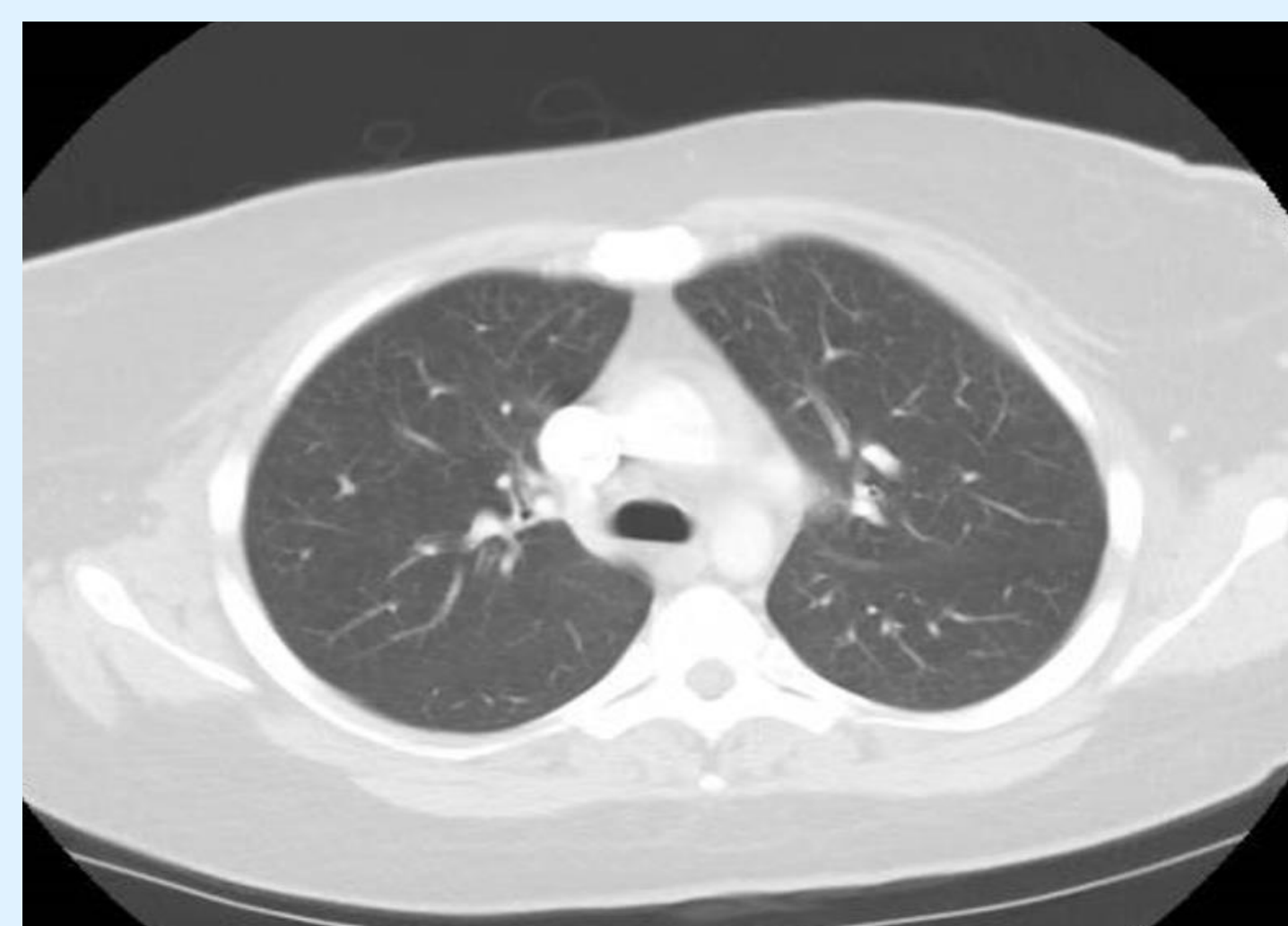
Repeat CT chest and abdomen had stable lymph nodes and spleen 13 cm. She reported resolution of her symptoms with improved appetite.

## Significant labs and imaging



Labs	Levels	Normal range
Hb	6.6 g/dl	12-16 g/dl
MCV	105	80-100
LDH	3300 U/L	120-246 U/L
WBC	3300/UL	4000-11000/UL
Platelet count	78,000/UL	150-400,000/UL

Iron	110	50-170 ug/dl
Ferritin	38	10-291 ug/dl
Vitamin B12	150	220-1000 pg/ml
Folate	8.7	3-16 ng/ml
Methylmalonic acid	1.71	< 0.4 nmol/ml
Homocysteine	6.7	3.7-13.9 mmol/L



## Discussion

Vitamin B12 deficiency has diverse presentations including anemia, pancytopenia and myelodysplastic abnormalities. Our patient had clinical presentation and lab abnormalities highly concerning for hematological malignancy like lymphoma along with imaging finding further intriguing for the same.

Basic rule of medicine is always to rule out reversible causes for any condition and as a part of the workup, it revealed Vitamin B12 deficiency due to pernicious anemia. This avoided the need for an invasive bone marrow study.

It is important to recognize that bone marrow biopsy in patients with vitamin B12 deficiency could be misleading, because it may appear to show dysplastic changes mimicking myelodysplastic syndrome or acute leukemia.

Vitamin B12 deficiency should be ruled out in all suspected diagnosis of myelodysplastic syndrome and acute myeloid leukemia in clinically relevant settings.

## References:

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