Anemia in Rheumatoid Arthritis: A Case Series Exploring Etiology, Clinical Presentation, and Management

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Abstract

Rheumatoid arthritis associated with anemia seen in upto 60% of patient during the course of disease, objective of study is to highlight diagnostic challenge and the importance of systematic hematological workup. Its an observational case control study patients who are already a known case of Rheumatoid arthritis and were asked for regular follow up and Labs were done especially cbc and iron profile were compared and to study association and underlying cause. In our study it was seen patient were not able to come on regular follow up usually they tend to miss follow up and would come after long time and in mean time they used to get there treatment from local doctors nearby. Conclusion was that on relying upon MCV solely is misleading.

Introduction

Rheumatoid arthritis (RA) is one of the most common inflammatory arthritides. It is associated with multiple systemic features, including hematological manifestations such as anemia, neutropenia and thrombocytopenia. However, immune hemolytic anemia is extremely rare with only 3 reports indexed in medline, and one of them being due to methotrexate toxicity. Rheumatoid Arthritis (RA) is commonly associated with anemia, seen in up to 60% of patients during the disease course. While normocytic anemia (anemia of chronic disease) is the most frequent type, microcytic anemia occurs in a notable subset. Microcytosis typically reflects iron deficiency anemia (IDA), but can also be seen in anemia of chronic inflammation or in the presence of concurrent thalassemia trait. Accurate identification of the underlying etiology is vital for proper management. The diagnosis of ACD is made by exclusion. The main problem in differential diagnosis of ACD in RA is the presence of concomitant iron deficiency. The most reliable characteristic for the detection of iron deficiency is stainable iron content in bone marrow aspirate. Extensive studies have demonstrated that for daily clinical practice a combination of serological characteristics was able to make a differentiation between an ACD and iron deficiency. The presence of low serum ferritin (< 50 g/l) in combination with high transferrin levels (50 g/l) and

decreased mean corpuscular volume (MCV) of erythrocytes (80 fl) results in 100% sensitivity and specificity for the detection of iron deficiency. Recently, serum transferrin receptor levels were proposed as a sensitive characteristic for detection of iron deficiency. In other words, patients with RA with anemia and with elevated serum ferritin level (> 50 g/l), excluding iron deficiency, will have an ACD. By using these characteristics, it is possible to avoid many invasive investigations (colonoscopy, gastroscopy, bone marrow aspiration).

Presentation of Case

Patient 1:

A 52y Female k/c/o pulmonary tuberculosis completed medication for 6 months, and Rheumatoid arthritis since 2 years, presented with chief complaints of joint pain since 2years on and off associated with joint swelling bilateral metacarpophalangeal joint, proximal interphalengeal joints and then slowly progressed to elbow and knee joints, associated with morning stiffness improves with daily activities and vomiting since 1 month progressive increased from 1-2 episode to 3 episodes per day (one episode of hematemesis)since last 2-3 days non projectile, non bilious not associated with meals, associated with decrease appetite and epigastric pain not associated with fever and diarrhoea.

Laboratory workup was done and other routine investigations were carried out, blood investigations and iron profile showed Iron deficiency anemia.

Patient 2

A 60 year old male k/c/o rheumatoid arthritis since 3 years presented with chief complaints of joint pain since 15 days, pain in pip, mcp, knee joints, associated with deformity(bouterine) associated with morning stiffness and generalized bodyache. Patient was started on HCQs 200 BD but was on irregular medication as well as in follow up. Ophthalmology examination was carried out but was insignificant. Labs were carried out showing anemia of chronic disease.

Patient 3

A 45 y old female k/c/o Rheumatoid arthritis since 3 years presented with chief complaints of generalized bodyache and joint pain since 10 days which was not associated with tenderness or swelling over joints. Patients labs showed IDA and also due to irregular follow up to institute instead patient tend to consult local doctors ending up prescribing NSAID's as pain killers which also led to complaints of abdominal pain(epigastric) with heart burns at intervals.

Patient 4

A 39y old female k/c/o rheumatoid arthritis since 2 years on regular medications presented with chief complaints of Irregular menstrual bleeding generalized bodyache and joint pain. On doing lab investigations mixed picture of IDA plus ACD was found.

Patient 5

A 41 y old female k/c/o Rheumatoid arthritis since 10 years on HCQ's 200 BD presented with chief complaints of joint pain generalized weakness labs were done showing low MCV along with iron profile was done which was not significant hplc was done which showed beta thalessemia

Discussion

Case 1 and 3 clearly demonstrated iron deficiency anemia from GI blood loss and NSAID use.
Case 2 presented with classic findings of anemia of chronic inflammation (elevated ferritin, low TIBC, moderate CRP.
Case 4 exhibited mixed features of both IDA and ACD, which is common in menstruating women with chronic inflammatory disease.
Case 5 mimicked IDA but was ultimately found to have β-thalassemia trait via HPLC — underscoring the importance of not assuming iron deficiency in all microcytic cases.
All microcytic anemia in RA should prompt iron studies. Routine NSAID use and occult GI blood loss are key culprits in iron loss. Thalassemia should be considered when iron indices are normal but MCV is persistently low.

S Iron in Males is 60-170 and in Female 60-140, In IDA iron and ferritin decreases and tibc increases, ACD Iron decreases TIBC can be normal or reduced and ferritin in normal or raised, Mixed type iron is reduced and tibc is normal and ferritin can be normal or raised.

Conclusion

Microcytic anemia in RA patients warrants a thorough evaluation to differentiate between iron deficiency, anemia of chronic disease, and hereditary conditions like thalassemia. Relying solely on MCV

can be misleading. A complete iron panel and, where indicated, genetic or hemoglobinopathy screening are essential for appropriate diagnosis and management.

Case Series Summary (n=5)

Patient	Age	Sex	RA Duration	Hb (g/dL)	MCV (fL)	Ferritin (ng/mL)	TIBC	CRP (mg/L)	RDW (%)	Iron Studies Interpretation	Notable Findings
1	52	F	2 yrs	10.2	71	11	↑	25	16.2	Iron Deficiency	Occult GI bleed
2	60	M	3 yrs	11.0	76	80	↓	34	13.5	Anemia of Chronic Disease	Active RA flare
3	45	F	5 yrs	9.5	68	8	↑	29	17.5	Iron Deficiency	NSAID-induced gastritis
4	39	F	2 yrs	11.8	74	35	Normal	19	14.2	Mixed IDA + ACD	Recent heavy menstruation
5	41	M	10 yrs	11.4	77	250	Normal	10	12.0	Thalassemia trait suspected	HPLC: β-thal trait

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