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Anemia: Transfuse First or Diagnose First?

Chimaobi Isiguzo[1*], Anthony Uzoho[1], Onyekpere Chigozirim[1], Chinyere Opara[2], Stanley Lemchi[3] and Samson Akiniyi[4]

[1]Plastic and Reconstructive Surgery Unit, Department of Surgery, Federal University Teaching Hospital, Owerri, Imo State, Nigeria

[2]Hematology Unit, Department of Internal Medicine, Federal University Teaching Hospital, Owerri, Imo State, Nigeria

[3]Neurosurgery Surgery Unit, Department of Surgery, Federal University Teaching Hospital, Owerri, Imo State, Nigeria

[4]Department of Anaesthesia, Federal University Teaching Hospital, Owerri, Imo State, Nigeria

ABSTRACT

Severe anemia as a pathological entity can be poorly managed with allogeneic blood transfusion if appropriate hematological diagnosis is not made. A 'transfusion mentality' that one solution (allogenic blood transfusion) fits all anemia can lead to poor outcomes and increases the risk associated with allogeneic blood transfusion. The case report emphasizes that all anemia must be diagnosed first to determine etiology and hence appropriate treatment. It also shows that not all anemia needs blood transfusion. Respecting patient's wishes can be in the best interest of the patient and the physician.

***Corresponding author**

Chimaobi M Isiguzo, Plastic and Reconstructive Surgery Unit, Department of Surgery, Federal University Teaching Hospital, Owerri, Imo State, Nigeria,

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Introduction

One of the common practices among clinicians in both developing and developed regions is to transfuse allogenic blood in order to treat or correct anemia. Blood transfusion is seen as a handy solution – a quick fix indeed. The decision to transfuse blood or blood products is a complex one for most physicians [1]. Underpinning most decisions to transfuse is the belief by healthcare providers that it will always be in the best interest of the patient at all times [1]. Sometimes, the decision is made without taking time to determine the cause of anemia.

The decision to transfuse has been interrogated recently due to emerging evidence on the risks that are associated with transfusion of blood and blood products.

It has been found through hemovigilance schemes in some parts of the world that poor transfusion practice in hospital is frequent and occasionally results in catastrophic consequences for patients [2]. Also it has been established that blood transfusion is fraught with risks. Transfusion related acute lung injury, bacterial contamination of platelets and transfusion-associated graft-versus-host disease have been identified as important preventable causes of mortality and morbidity [3,4]. The risks and adverse effects list has actually grown longer. Hence, the current guidelines are advising against unnecessary and inappropriate transfusion [5].

Anemia as a pathological entity usually arises from various causes that may not need blood replacement through allogenic blood transfusion. The etiology may be nutritional, trauma induced, renal dysfunction, infective, neoplasm etc. Also the use of 10g/dl as the trigger for transfusion has been queried as shown by the physiological tolerance of the body to anemia.

In this era of Patient Blood management, the focus is on patient centered care. PBM is tailoring the patient's blood management to the specific characteristics of each patient [6]. If PBM principles are applied, every anemia must be diagnosed in order to determine the right intervention which may not be an allogenic blood transfusion, as this case report of a patient with very severe anemia illustrates.

Case Report

A 42 year male married petty trader presented with severe generalized body weakness of more than 5 days duration. He was referred from a peripheral centre on account of severe anemia of unknown cause. This was associated with occasional low grade fever for which he had been with antimalarials. There was no history of hematemesis, bleeding per rectum or from any orifice, or weight loss. Patient's diet was essentially carbohydrates with minimal proteins and vegetables. Patient had not passed dark colored urine or taken any other medication in the recent past. His appetite was poor. He had declined blood transfusion at the peripheral centre due to religious reasons (a Jehovah's Witness).

Examination revealed severe pallor and no jaundice. Peripheral lymphadenopathy was absent. The pulse rate was 94bpm with a blood pressure of 110/80mmHg and normal temperature. There were no positive abdominal symptoms and had no significant findings in other regions. A provisional diagnosis of severe anemia with unknown etiology was made.

The patient was admitted and initially offered transfusion of 4 units of whole blood to correct the anemia in the emergency

room but he declined for the same reason as above. However, the hematology team was invited, and they decided to investigate the anemia exhaustively.

A diagnosis of Binutritional Anemia was made due to the findings of low serum levels of folate, Vitamin B12, blood and bone marrow cell features.

The patient was placed on IM hydroxycobalamine 1000mcg on alternate days for 2 weeks, folic acid tablets 5mcg daily and 400mg ferrous sulphate daily for 4 weeks. Patient was discharged home after 8 days and continued his care as outpatient. After 8 weeks of follow up, the Hemoglobin level rose to 10g/dl without any allogenic blood transfusion. The patient is yet to return for further follow-up care.

Discussion

The essence of this report is to emphasize the fact that the treatment of anemia is not a 'one size fits all' approach. All anemia must not be treated by transfusion of allogeneic blood. Indeed, there is evidence to suggest that iron therapy, with or without erythropoietin, is a more rational and scientific treatment for anemia, with proven efficacy [4]. If the index patient was rapidly transfused with units of whole blood it would have been difficult to make a delineation of the probable etiology. Treatment of the value of the number of pack cell volume (PCV) or the hemoglobin (Hgb) with allogenic blood as management of anemia should be discouraged as such interventions may mask or delay diagnosis of the etiology of anemia, as well as result in worse outcomes.

In the recent decades whole blood transfusion has come under scrutiny because of identifiable risks that are associated with it. Evidence abounds that even in the critically ill, transfusion is independently associated with worse outcomes [7]. Also, there is considerable evidence that low levels of anemia can be tolerated in healthy subject, even when induced by normovolemic dilution [8,9]. Some studies induced the dilutional anemia down to 5g/dl hemoglobin with no untoward effects on oxygen delivery in healthy individuals [10]. The tolerance of anemia in patient who rejected allogenic transfusion is evidence that anemia can be tolerated even in the very ill. In such patients it is only when nadir hemoglobin falls below 5 – 6g/dl morbidity and mortality increases significantly [11].

In the index patient the Hgb was even lower (3.3g/dL), yet patient vital signs did not show any marked derangement. It was in the best interest of the patient to withhold transfusion in accordance with the patients's wish and to investigate the anemia bearing in mind the risk of blood transfusion and the possibility of treating anemia successfully without blood transfusion. The etiology in the index patient was purely of nutritional deficiency and resulted in targeted treatment without exposing the patient unnecessarily to the risk of transfusion. Increased tolerance for anemia which is one of the pillars of WHOs 'Patent Blood Management' should be practiced actively in order to reduce the risk of avoidable transfusions.

Since anemia is an independent predictor of morbidity and mortality in the community preoperatively, and in hospitalized populations even when mild, every form or degree of anemia should warrant evaluation, identification of etiology and targeted treatment [12]. The era of using units of allogeneic blood transfusion as first line treatment is over. Treatment of anemia should be evidence based and targeted.

The case further emphasizes the usefulness of respecting patient's autonomy. Due to the respect for and recognition of patient's right, the managing physician embarked on a standard of care that requires a diagnosis before treatment, which is purposeful, cost effective and indeed safer. Every avoidable allogenic transfusion should be avoided. The comfort of just giving blood transfusion for any anemia in being discouraged even for patients who are not requesting for bloodless medical and surgical care because of the available evidence. On the other hand, a doctor should not consider self to be negligent for opting to use an emerging medical alternative/option (Bloodless Medicine and Surgery or Patient Blood Management) that has been that has been supported by evidence [13,14].

Conclusion

Anemia can be treated successfully without blood transfusion. Treatment should be preceded by hematological diagnosis to address the issue correctly. This proper process can be jeopardized by a 'transfusion mentality', especially in severe anemia when clinicians tend to offer transfusion first. The patient's rejection of blood transfusion paved the way in this case for proper diagnosis of his anemia and successful treatment without blood transfusion, in accordance with the patient's wish.

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