J Biochem Tech (2018) Special Issue (2): 137-140
ISSN: 0974-2328

Assessment of Role of Blood Transfusion in Management of Anemia in Hospitalized Patients, Dr. B. R. Ambedkar Medical College and Hospital, Bangalore, India

Negar Tarahhomi*, Binai K Sankar, Deepti S. P

Received: 28 March 2018 / Received in revised form: 06 Jun 2018, Accepted: 11 June 2018, Published online: 05 September 2018

Abstract

Objective: The study was performed to analyses the role of blood transfusion in management of anemia, and to analyses the pattern of medications prescribed along with blood transfusion. Methodology: A total of 60 inpatients were included in this study. Prescriptions and treatment chart of inpatients and lab data were reviewed prospective observational for evaluation of role of blood transfusion in management of anemia. The inpatient case sheets and prescriptions and lab data will be screened for analysis of prescriptions pattern of supplement to patient on blood transfusion and frequency of blood transfusion on daily basis. All the prescribed supplement along with other medications and lab data and blood transfusion notes and other relevant information will be noted in a customized data collection form to find out the assessment of role of blood transfusion in management anemia. The prescription and blood transfusion data will be assessed whether it is according to hospital blood bank policy and in case of violation the reason for it will be noted down. Result: Out of 60 patients, Majority of the patients belonged to the age group between 20-30 years (26.67%), while the least belonged to the age group of 71-80 (5%). Majority of the patient i.e. (51.66%) had anemia caused due to other diseases and the minority cause of anemia was due to Thrombocytopenia i.e. patient (3.33%). From 60 patients, 41 (68.33%) patients receive treatment only with transfusion and 19 (31.66%) patients receive medication along with transfusion. Out of 19 patients who received medication, 14 patient received Ferrous Ascorbate with Folic Acid. Most of the patients included (53.33%) in the study received two transfusions, while (21.67%) received more than two transfusions and (25%) received only one-pint transfusion. One (1.66%) of the patients was observed with Transfusion related ADR. Conclusion: Majority of the patients belonged to the age group between 20-30 years. Patients with anemia due infestation of other diseases were compared to those other types of anemia. 68.33% of the patients received treatment only with transfusion. Orofer XT was the most commonly prescribed drug. Most of the patients included (53.33%) in the study received two transfusions. Only one patient developed adverse reaction due to transfusion.

Key words: Anemia, Blood Transfusion, Hemovigilance

Introduction

Anemia is a typical and imperative issue in patients with cancer. Diverse definitions are utilized to characterize anemia such as a lower than ordinary number of red blood cells (RBCs) or less than the normal amount of hemoglobin (Hb) in the blood; a lack of oxygen-carrying RBCs; or a lack of oxygen conveyance to tissues. Distinctive cutoff estimations of Hb have been given to characterize anemia depending on gender and age. Most ordinarily, the World Health Organization (WHO) definitions are utilized to characterize the cutoff Hb level in women as 12 g/dL and in men as 13 g/dL (Beutler and Waalen, 2006). When utilizing a cutoff value of Hb of 12 g/dL for both men and women, the commonness of anemia in cancer is around 40%, as saw in the European Survey on Cancer Anemia (ECAS) in almost 15,000 cancer patients with various stages of disease and treatment (Ludwig et al., 2004).

The main complications of untreated anemia may include Severe fatigue, Pregnancy complications like premature birth and miscarriage, Heart problems and even death. Numerous medical conditions cause anemia. Basic reasons of anemia include the following: (Briggs and Arguin, 2013; Haider et al., 2013; Kriplani et al., 2013)

- Anemia from active bleeding: Loss of blood through overwhelming menstrual draining or wounds can cause anemia. Gastrointestinal ulcers or cancers for example, cancer of the colon may gradually overflow blood and can also cause anemia.

Negar Tarahhomi*, Binai K Sankar

Department of Pharmacy Practice, Acharya & B.M. Reddy College of Pharmacy, Bengaluru, India.

Deepti S. P

Department of Pathology, Dr. B. R. Ambedkar Medical College and Hospital, Bengaluru, India.

***Email:** negartarahmi@gmail.com

- Iron insufficiency anemia: The bone marrow needs iron to make red blood cells. Iron (Fe) assumes a critical role in the best possible structure of the hemoglobin molecule.
- Anemia of chronic disease: Any long-term medical condition can lead to anemia. The precise component of this procedure in obscure, however any long-standing and continuous medical condition for example, chronic infection or a cancer may cause this kind of anemia.

- Anemia related to kidney disease: The kidneys release a hormone called the erythropoietin that helps the bone marrow make red blood cells.
  - Anemia related to pregnancy: Water weight and liquid increase amid pregnancy dilutes the blood, which might be reflected as anemia since the general grouping of red blood cells is lower.
  - Anemia related to poor nutrition: Vitamins and minerals are required to make red blood cells. In addition to iron, vitamin B12 and folate (or folic acid) are required for the best possible creation of hemoglobin (Hgb).
  - Pernicious anemia: There likewise might be an issue in the stomach or the intestines leading to poor absorption of vitamin B12.
  - Sickle cell anemia: In certain people, the issue might be identified with generation of abnormal hemoglobin molecules. In this condition, the hemoglobin issue is qualitative, or functional.
  - Thalassemia: This is another gathering of hemoglobin-related reasons of anemia. There are numerous sorts of thalassemia, which fluctuate in severity from mild (thalassemia minor) to severe (thalassemia major).

Anemia is diagnosed using laboratory methods to estimate the haemoglobin content of blood, and the morphology of RBCs. Management of Anemia is done using supplementation of the deficient factor (iron, or vitamins), using colony stimulators or erythropoetins, or using blood transfusion. Blood transfusion is a procedure of exchange of blood or blood components from one individual (the donor) into the bloodstream of someone else (the recipient). Blood transfusion might be done as a lifesaving move to supplant blood cells or blood products lost through bleeding or due to depression of the bone marrow. Transfusion of one's own blood (autologous) is the most secure strategy yet requires arrangement ahead of time, and not all patients are qualified for it. Directed donor blood enables the patient to get blood from known donors. Volunteer donor blood is normally most promptly accessible and, when properly tested, has a low risk of side effects. Blood transfusion can be life-saving and provides great clinical benefit to many patients but it also associated with issues like immunological complications, incompatibility of blood groups, Infections and immunomodulation. (Anemia, 2017) This study is focusing to investigation of role of blood transfusion in management of anemia in hospitalized patients, Dr. B. R. Ambedkar medical college and hospital, Bangalore, India

Materials and Methods

The study was conducted in the Inpatient wards of Dr. B.R. Ambedkar Medical College and Hospital, which is a 760-bedded multispecialty tertiary care teaching hospital in Bengaluru. Data was collected using a self-designed case report, which consisted of details like demographics, medical history, diagnosis, lab data, comorbidities, drug therapy and other relevant information. The present study was a longitudinal observational study. The investigators identified all patients prescribed a blood transfusion through requests received at the hospital’s blood bank. The patients, or the caretakers, were interviewed and complete medical history was obtained. Additional information, like demographics, current medication, diagnosis and indication for blood transfusion was obtained from medical charts. The investigators cross checked blood grouping reports prior to commencement of blood transfusion, and the patients were monitored through the period of transfusion. Any information about adverse events after the transfusion was obtained from nursing staff. The data obtained were recorded in the case report form, and the collected data was then entered in Microsoft Excel and appropriate analysis was performed.

Result and Discusion

A total of 60 patients who satisfied the inclusion and exclusion criteria were included in the study. Majority of the patients included in the study belonged to the age group 21-30 years (26.66%), and the least belonged to the group 71-80 years (5.00%).

In the present study carried out in the tertiary hospital the percentage of transfusion related reaction was found to be 1.66%.The study is similar to the study at a tertiary care hospital that was carried out by D.R Somagiri et al. (2015) where haemovigilance set up was made where in it was observed that out of 51,000 Transfusion that had taken place 106 show transfusion reaction i.e. 0.207% out of which non febrile transfusion reaction Transfusion reaction consisted of 50% and A study done by Paula H B Maggs, Hannah Cohen (2013) in the UK started with the haemovigilance program and it was observed that out of 400 hematology department 111 wrong blood incidents were recorded i.e. 25% and 6 deaths. The record of these studies helped in developing a haemovigilance committee in the hospital.

Majority of the patients included in the study (31, 51.66%) had anemia of chronic disease, followed by Iron deficiency anemia (12, 20.00%). Detailed distribution is presented in Table 1.

Table 1: Distribution of types of anemia

types of anemia	No of Patient	% of Patient
Iron Deficiency Anemia	12	20
Severe Anemia	11	18.33
Pancytopenia	4	6.67
Thrombocytopenia	2	3.33
Other disease Induced Anemia	31	51.67

Out of 60 patients, 41 (68.33%) patients received treatment only with transfusion and 19 (31.66%) patients receive medication along with transfusion. Ferrous Ascorbate was the most commonly used supplementation (14, 53.85%), while Elemental Iron and Vitamin B12 were used 1 patient each. Detailed distribution is presented in Table 2

Table 2: Distribution of medications prescribed

medications prescribed	No of prescription	% of prescription
Ferrous Ascorbate	14	53.85
Pyroxidine Hydrochloride	3	11.54
Vitamin B12	1	3.85
Ascorbic Acid	2	7.69
Ferrous Fumarate	2	7.69
MultiVitamins	3	11.54

Most of the patients included (53.33%) in the study received two transfusions, while 21.67% received more than two transfusions as described in Table 3.

Table 3: Distribution of patients by number of transfusions

transfusions	number of transfusions	% of transfusions
Iron Deficiency Anemia	12	44.44
Severe Anemia	11	40.74
Pancytopenia	4	14.81

All patients received a blood transfusion were monitored for presence of transfusion related reactions. Only one study patient (1.66%) developed an allergic reaction. Severity of the reaction was assessed using Hartwig's Severity Assessment Scale. The reaction was classified as level three (moderate) on the Hartwig's scale.

In our study carried out it was observed that the Transfusion related reaction was an allergic reaction. The same type of reason for transfusion related reaction was found in a study carried out by Negi G, Gaur SD and Kaur R in a tertiary care hospital in Uttrakhand (Negi, Gaur and Kaur, 2015) where the major cause of Transfusion related reaction was allergic and it was observed in 34 patients out of total 101. Standard Guidelines of Blood collection and storage Include: It was observed that patients underwent multiple transfusion. It should be noted that patients undergoing multiple transfusions are at a higher risk of developing infection and transfusion related ADR. In the present study, Ferrous Ascorbate was the most commonly used agent for replenishment of iron stores. All prescriptions contained Folic Acid in combination as well.

Conclusion

the study was conducted in a teaching hospital in suburban premises of Bangalore. The study included patients from inpatient department who underwent blood transfusion. Majority of the patients belonged to the age group between 20-30 years. Patient with anemia caused due infestation of other diseases were more when compared to those with other types of anemia. Most of the patients received treatment only with transfusion and among patients who received medication along with transfusion, Orofer XT was the most commonly prescribed drug. Out of total 60 cases, only one patient developed adverse reaction due to transfusion, which concludes that It is extremely essential to evaluate and monitor blood transfusions and to conduct studies from time to time for enabling suitable

modifications in blood transfusion process to increase the therapeutic benefits and also to decrease the adverse effects for optimizing the health care services.

References

Anemia [Internet]. WebMD; 2017 [Cited 2017 Jun 16]. Available from: http://www.emedicinehealth.com/anemia/page1_em.htm.

Beutler, E., & Waalen, J. (2006). The definition of anemia: what is the lower limit of normal of the blood hemoglobin concentration?. Blood, 107(5), 1747-1750.

Bolton‐Maggs, P. H., & Cohen, H. (2013). Serious H azards of T ransfusion (SHOT) haemovigilance and progress is improving transfusion safety. British journal of haematology, 163(3), 303-314.

Briggs, M., & Arguin, P. M. (2013). Published reports of delayed hemolytic anemia after treatment with artesunate for severe malaria-worldwide, 2010–2012. MMWR. Morbidity and mortality weekly report, 62(1), 5.

Haider, B. A., Olofin, I., Wang, M., Spiegelman, D., Ezzati, M., & Fawzi, W. W. (2013). Anaemia, prenatal iron use, and risk of adverse pregnancy outcomes: systematic review and meta-analysis. Bmj, 346, f3443..

Kriplani, A., Mahey, R., Dash, B. B., Kulshreshta, V., Agarwal, N., & Bhatla, N. (2013). Intravenous iron sucrose therapy for moderate to severe anaemia in pregnancy. The Indian journal of medical research, 138(1), 78.

Ludwig, H., Van Belle, S., Barrett-Lee, P., Birgegård, G., Bokemeyer, C., Gascon, P., ... & Schneider, M. (2004). The European Cancer Anaemia Survey (ECAS): a large, multinational, prospective survey defining the prevalence, incidence, and treatment of anaemia in cancer patients. European journal of cancer, 40(15), 2293-2306.

Negi, G., Gaur, D. S., & Kaur, R. (2015). Blood transfusion safety: A study of adverse reactions at the blood bank of a tertiary care center. Advanced biomedical research, 4.

Somagari, D. R., Sriram, C. S., Rachamalla, C. K. V., Dutta, U. C., Chaliha, T., Lahkar, M., & Bezbaruah, B. K. (2015). Haemovigilance study at a tertiary care hospital in the north‐east of India. ISBT Science Series, 10(2), 61-64.