

Evaluation of the blood transfusion strategy in Baghdad Teaching Hospital

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Summary:

Background: Guidelines for blood products transfusion are needed to avoid unnecessary blood transfusion in acute and chronic anaemias to minimize complications.

Objective: To evaluate the practice of blood transfusion in Baghdad Teaching Hospital.

Patients and methods: One hundred and sixty adults Iraqi patients, who had blood transfusion, were selected randomly from different wards of Baghdad Teaching Hospital including General Medicine (GM), General Surgery (GS), Gynecology/Obstetrics (G/O), forty patients from each ward, from October 2011 to October 2012. Collected data included age, gender, type of ward, indication for transfusion, pre-transfusion packed cell volume (PCV) and hemoglobin (Hb), type (whole blood or red blood cells (RBCs)) and number of units transfused.

Results: Pre-transfusion PCV was >30% (Hb >10gm/dl) in 23.1% of the patients, and were highest in G/O (47.5%) and GS (37.5%) wards. Whole blood was given instead of RBCs to 60% of patients (100% in G/O and GS). Single unit blood was given to 22.5% of patients (37.5% in G/O and 35% in GS).

Conclusion: There is general unawareness of the risks of blood transfusion in Baghdad Teaching Hospital as shown by the use of whole blood instead of RBCs and single unit transfusion, so a more restrictive strategy is needed by following the international guidelines.

Key words: Whole blood, Red blood cell transfusion. Single unit transfusion

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Introduction:

Blood transfusion is not a safe procedure, and a decision to transfuse must be balanced between benefits and hazards (1). It would be unwise to believe that new diseases transmitted via transfusion will not be discovered (2). Recognition in 1980 that transfusion carries a risk of HIV infection forced the reevaluation of transfusion, the trigger of Hb level was shifted from 10gm/dl to the level necessary to meet tissue oxygen demand (3), and a more restrictive strategy (4,5). World health organization strongly discourage single transfusion in adults (6), as any healthy adult can donate one unit blood without the need of any replacement fluid, and single unit can increase Hb by approximately 1-1.5gm/dl in a 70kg adult, which is therapeutically insignificant rise (6,7). Single unit transfusion is recommended for patients having symptoms of ischaemia or hypotension with anaemia, renal or heart failure for which additional unit is contraindicated (8). Whole blood is a raw material consists of red cells, platelets, white blood cells and more than 200 proteins. It poses a risk of alloimmunization and transmission of infection (9). The American Association of Blood Bank (AABB) developed guidelines which included restrictive strategy, and decision should be influenced by symptoms as well as Hb concentration. They recommend transfusion when Hb is 7-8gm/dl to

hospitalized stable patients, and 8gm/dl for patients preexisting cardiovascular disease with symptoms (10). In acute blood loss, the decision to transfuse according to British Committee of Standards of Hematology (BCSH) depend on the amount lost as guided by clinical picture (blood pressure, pulse rate, urinary flow, skin color and temperature and mental state) whereby a loss of 2000 ml need rapid replacement, while a loss of 750 ml don't, and a loss of 750-2000 needs transfusion with crystalloids or colloids unless the patient has pre-existing anaemia, reduced cardiorespiratory reserve or continuous blood loss (11). The objectives in pre-operative settings should be to manage the patient so that transfusion is not needed. Anaemia should be corrected before elective surgery, e.g. with iron in iron deficiency anaemia (12,13). Aim of the study: is to evaluate the practice of blood transfusion in different wards of Baghdad Teaching Hospital.

Patients and methods

One hundred and sixty patients were randomly selected from patients admitted to different wards of Baghdad Teaching Hospital including GM, H, GS, G/O wards (40 from each ward) during the period between October 2011 to October 2012. These patients were adults (age > 11years), who had received blood transfusion for different indications according to the order of the treating doctor. Data collected

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included age, gender, indication for transfusion, pre-transfusion PCV and Hb, type of transfusion (whether whole blood or RBCs concentrate), and number of units transfused. These data were collected from patient's records.

Statistical analysis

Data were entered into statistical package for social science (SPSS) program for windows version 15. Quantitative variables were summarized by finding mean $\pm$ SD.

Results:

Out of 160 patients randomly selected from GM, H, GS, G/O wards (40 patients each), 65 (41%) were male and 95 (59%) were female. Age range was 11-85 years with a mean of 41.36 ± 17.48 years. Mean pre-transfusion PCV(Hb) was 21.81%(7.13gm/dl) in GM, 20.81%(6.6gm/dl) in H, 28.42%(9.38gm/dl) in GS, and 29.10%(9.45gm/dl) in G/O wards. PCV (Hb) was $> 30\%$ (10gm/dl) in 7.5% in GM, none in H, 37.5% in GS, and 37.5% in G/O wards. (Table 1)

Number of units received by each patient ranged between 1-12 with a mean of 3.15 in GM, 3.4 in H, 2.4 in GS, and 2.05 in G/O wards. Number of patients who received single unit of blood were 4(10%) in GM, 3(7.5%) in H, 14(35%) in GS, and 15(37.5) in G/O wards. (Table 2) Whole blood instead of RBCs concentrate was received by 14(35%) in GM, 2(5%) in H, 40(100%) in GS and 40(100%) in G/O wards. (Table 3) Indications for blood transfusion in GM wards were mainly upper gastrointestinal bleeding 11(27.5%), iron deficiency anaemia 9(22.5%), lower gastrointestinal bleeding 5(12.5%), while they were mainly acute leukemia 24(60%), lymphomas 5(12.5%) in H ward. In GS ward they were mainly pre-operative 30(75%) and upper gastrointestinal bleeding 4(10%). In G/O wards they were mainly pre-operative 30(75%) and vaginal bleeding 9(22.5%).

Table 1: Pre-transfusion PCV according to wards

Ward	PCV %	No of patients	%
General Medicine	<30*	37	
	≥ 30	3	92.5
Haematology	<30	40	
	≥ 30	0	100
General Surgery	<30	25	
	≥ 30	15	62.5
Gynecology/Obstetrics	<30	21	
	≥ 30	19	52.5
			47.5

*PCV30%=10gm/dl Hb

Table 2: Mean number of transfused units of blood and number of patients with single unit transfusion

Ward	Mean No of transfused units	Single transfusion unit No (%)
General Medicine	3.15	4 (10)
Hematology	3.42	3 (7.5)
General Surgery	2.4	14 (35)
Gynecology/Obstetrics	2.05	15 (37.5)

Table 3: Type of transfusion according to ward

Type of blood	General Medicine		Hematology		General Surgery		Gynecology/Obstetrics	
	No	%	No	%	No	%	No	%
Whole blood	14	35	2	5	40	100	40	100
Red blood cell concentrate	26	65	38	95	0	0	0	100
Total	40	100	40	100	40	100	40	100

Discussion:

The ready availability of blood has resulted in liberal use of blood transfusion. In adult, blood loss up to 20% (about one liter in 70kg adult) is well tolerated provided the circulatory volume is maintained with colloid or crystalloid (14). This liberal use is demonstrated in our study which showed that 37 patients (23.1%) with PCV $>30\%$ (Hb $>10\text{gm/dl}$) had blood transfusion. (GM 7.5%, GS 37.5%, G/O 47.5%). These results are less than what was reported on 2009 by Hassan(15) in Baghdad Teaching Hospital which was 42.9%, putting in mind that many studies discouraged blood transfusion with PCV $>30\%$ (Hb $>10\text{gm}$) even in the pre-operative settings(11,16,17). Single unit transfusion is considered as inappropriate practice by many studies (18,19). We found that 36 patients (22.5%) had single unit transfusion (H 7.5%, GM 10%, GS 35%, G/O 37.5%). This is higher than what shown by a study in rural hospital in Australia, which was 16.3%(18). Whole blood was given to 96(60%) patients (GM 35%, H 5%, GS 100%, G/O 100%). This is comparable to 64% found by Hassan(15), and both results shows unawareness of the adverse effects attributed to plasma, WBC and platelets contents of the whole blood(10). Pre-operative build up of Hb was the main indication of transfusion in GS and G/O (75% in both wards). Analysis of 17 studies involving 3746 patients did not demonstrate any difference between liberal and restrictive approach in terms of mortality rate, cardiac incidents, cerebral stroke, pneumonia or thromboembolic episodes. The restrictive policy is beneficial only in relation to the reduction of the number of infections (20), this is also supported by Vignali(21) who concluded that pre-operative transfusion of one unit of blood is not justified, as increase of 1gm/dl is irrelevant and put the patient at risk of infection. The majority of authors suggested that pre-operative Hb of 7gm/dl is an absolute

indication for transfusion, but this should be higher (9-10gm/dl) in patients with cardiovascular disease, moreover it should depend on dynamic changes such as hemorrhage, changes in general condition and in haemostatic system (8,22). Because of this unrestrictive use, Australian authorities had arranged education program about transfusion guidelines published on 1994-1997, some had achieved 29% decrease in transfusion per 100000 admissions (23), and 81% decrease in inappropriate transfusion (24).

Conclusion:

Inappropriate use of blood transfusion is shown in this study, as it was given to patients with PCV >30(10gm/L), the use of whole blood instead of RBCs concentrate, and by the transfusion of single unit of blood. Compliance with international guidelines is recommended to minimize unnecessary side effects of blood transfusion.

Authors Contributions:

Khudhair A. AL- Khalissi : Supervisor.

Mohamed A. Abbas: Cases Collection and organization.

Mohammad J. Mohammad: post graduate Student in Iraqi in board General Medicine.

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