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Frequency of Clerical Error in Sudan Military Hospital Blood Bank Sudan Experience

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Abstract Clerical error is the greatest threat to safe blood transfusion. The most common cause for a major hemolytic transfusion reaction is a clerical error, such as a mis labeled specimen sent to the blood bank, or not properly identifying the patient to whom you are giving the blood. This study designed to identify the errors occurring during blood donation which might result in undesirable reactions, so to detect the clerical error on the Military hospital blood bank (Omdurman-Sudan), a total of three hundred known blood group samples were been collected from the donation unit Firstly direct grouping was repeated for all samples to ensure the blood group, and then all donation steps (donor registration, blood sample labeling, bar coding, ABO grouping, documentation and finally the blood bags in the refrigerators) were checked out. An error was observed on three samples out of the three hundred revised blood donation processes.

Keywords Clerical, ABO grouping, Transfusion, Error

1. Introduction

The administration of blood and blood components involves more than 70 steps and each of these may be subject to error [1]. The transfusion of ABO mismatched blood usually results from patient misidentification and sample labeling errors during phlebotomy. It's a common problem worldwide [2, 3]. Errors and adverse events in transfusion medicine are a significant concern, and many problems are unappreciated and likely to be underreported [4]. A random unit administered to a random recipient without typing or cross matching has more than a 1 in 3 chance of being ABO incompatible with the recipient [5].

Mis transfusion of blood remains a serious patient safety issue, with the vast majority of mis transfusions resulting from avoidable errors at various points in the transfusion chain, during the 1990s, mistakes in pre transfusion testing accounted for approximately 14% of ABO-incompatible transfusions in New York [6]. Such errors often result in death or major morbidity [7]. Mistakes in the identification and labeling procedure in blood testing can result in serious adverse events [8-10], including the death of the patient [6]. Mislabeling of test tubes for blood transfusion pre-testing, a highly regulated task, is reported to occur in median in 1 out of 165–200 test tubes [11, 12]. Mislabeling is responsible for 50% of all identification errors in the TTP [10].

Human factor is necessary in the investigation of errors surrounding mislabeling and mis collection of blood samples since, in spite of attempts to reduce wrong blood in tubes (WBITs), the rate of occurrence remains relatively stable in this human-run process [13].

Shulman and Kent [14] studied the frequency of errors in the placement of blood units in the blood bank refrigerator. At one large institution, they found a placement error rate of 0.12% or 1 per 862 (112 units of 96581), with about one third of these having the potential for ABO incompatible transfusion if released without careful double checking.

This study designed to identify the errors occurring during blood donation which might result in undesirable reactions.

2. Materials and Methods

This cross-sectional study was conducted during September – October 2013. All blood samples were been collected from the Military hospital blood bank (Omdurman-Sudan). A total of 300 known labeled blood groups samples were been collected from the donated blood bags to detect the clerical errors, re -grouping of all blood samples was done using direct grouping tube method, in which direct blood grouping was done using 5% of the red blood cells suspension of the donor against monoclonal Ig M anti-A and anti-B anti sera. Two drops of 5% of the red blood cells suspension of blood sample was divided into two different tubes, One drop of anti-A anti sera was added to the first tube and one drop of anti B anti sera was added

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to the second tube, the two tubes were centrifuged at 5.000 rpm for twenty seconds and reaction was observed and interpret [15]. The donation steps (donor registration, blood sample labeling, bar coding, ABO grouping, documentation and finally the blood bags in the refrigerators) were checked to detect the source of the errors.

3. Results

Among the examined three hundred ABO blood groups samples, errors were detected in three samples (1%). The first error was mislabeling of a blood sample tube (0.06%). The second error was found in donor registration, bar coding, ABO grouping, documentation and in the blood bag in the refrigerator (0.278%). The third error was found in all donation steps (donor registration, blood sample labeling, bar coding, ABO grouping, documentation and finally the blood bags in the refrigerators) (0.33%).

4. Discussion

Most errors observed result from human actions and should be preventable [6]. The greatest risk in transfusion medicine is actually human error, resulting in the use of the incorrect blood component [13]. A major cause of ABO-incompatible transfusion is the "wrong blood in tube" (WBIT) phenomenon, that is, the sample is not from the recipient identified on the label [16]. Inadequate patient identification is recognized as a root cause for serious transfusion errors [17]. Way of labeling also contributes to near-miss events where it is reported that preprinted label gives higher rate of error in transfusion medicine compared to handwritten label [13]. While Linden [6] reported that misidentification and mislabeling represent up to 15% of errors, our results showed that mislabeling of the sample tube equal about 8.33% of the errors found. In respect to our study the first error didn't affect the blood recipient health, while the other two errors may lead to hazardous adverse reactions. However the three errors were found in the blood bags collected at night and this might be a reflection of overstress affected the staff who worked from early morning till the next day.

5. Conclusions

Blood donation plays an important role in transfusion medicine and the blood is the only choice for patients whom are in need to. Errors in blood group identification of both donor and recipient may cause hazardous reactions lead in some cases to death. Some errors can be avoided through continuous training of the staff and follow the standard measures in blood banks.

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