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Research Article

Transfusion Practice within the University Hospital Center Antanambao Tulear Madagascar

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Abstract

Introduction: Blood transfusion is a medical act requiring certain specificity. Our objective is to evaluate the transfusion practice of healthcare personal involved in the act of transfusion.

Methods: We carried out a prospective descriptive cross-sectional study over a period of 4 months from January to April 2022 within the 7 departments of the University Hospital Center Antanambao Tuléar, Madagascar.

Results: We retained 85 healthcares personal, among whom 83.53% were paramedical and 16.47% were doctors. None of the paramedical staff has had any training in transfusion. Only one service among the 7 studied has a transfusion protocol. The patient's consent before the transfusion act was requested in 96.47%. The transfusion documents and the blood voucher were completed correctly in 91.76% and 89.41%. The mode and shelf life of the LBP in the requesting department after the issuance of the LBP were in the refrigerator in 87.06% and was kept in less than an hour in 69.42%. Unused LBP were returned to the Regional Blood Transfusion Center in 95.29%. The transfusion lasted between 2 and 4 hours in 88.24%. Monitoring was done especially during the transfusion in 96.47%. The haemovigilance form was not filled out in 48.24. Complications were not mentioned in 45.88%.

Conclusion: Transfusion practice still has many shortcomings requiring improvement and capacity building to ensure transfusion safety.

INTRODUCTION

Blood transfusion is a medical procedure. It must be prescribed wisely. Its use requires special precautions because it exposes transfused patients to several complications, including immunological ones. Apart from the complications it can cause, blood transfusion also has other problems, such as the supply of components which is far from being solved. It is estimated that 8 million bags are needed to cover the needs of the 48 countries in the WHO (World Health Organization) African region. However, at present, barely 4 million bags are collected, which means that barely 50% of needs are covered [1, 2]. To date, in Madagascar, the blood bags available in blood transfusion center still do not cover the needs of patients. A study on the transfusion practice was carried out at the transfusion center located at Antananarivo, and which highlights the blood needs, the main prescribing services and the indications for transfusion but our study is based on the clinical practice of transfusion [3]. Recommendations for good transfusion practice have been issued to optimize the use of labile blood products, and to optimize transfusion safety. In this study, our objective is to evaluate the transfusion practice of the medical staff within the University Hospital Antanambao, Tuléar in order to identify the points to be reinforced or improved on the subject.

METHODS

We conducted a prospective descriptive cross-sectional study on the transfusion practices of medical staff in 7 wards of the university hospital, including the operating theatre, obstetrics and gynecology, intensive care, traumatology, general surgery, pediatrics and oncology. The study period was 4 months from January to April 2022. We drafted a questionnaire based on the recommendations of the appropriate clinical practice of blood transfusion [4-7]. It concerned all the medical staff who prescribe and perform the transfusion act within these departments and who agreed to answer the different questions necessary for the realization of this study. We questioned all medical staff in these services. Each staff was associated with a transfused patient, it is therefore an exhaustive sampling. We have included all medical staff agreeing to answer the questionnaire. The variables studied were the type of prescriber (physician / paramedic), the department of the prescriber, the training on transfusion,

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the existence of a transfusion protocol in the department, the existence of a request for patient consent prior to transfusion, the filling of the transfusion document. The transfusion document is made up of the typing result, the DIA (Detection of Irregular Antibodies) results, the compatibility test result in the laboratory, the order form, the time of blood administration, the transfusion follow-up. The state of completion of the blood order, the time between the order and the receipt of the components, the types of products requested, the products available at the blood bank and the components used in the service, the time between receipt and start of the transfusion, the number of bags requested and the number of bags delivered, the age of bags issued, the means and mode of delivery of the components, how and how long the components is kept in the ward and the fate of the unused components. Checking the identity of patients, checking the components, checking the transfusion documents, carrying out the cross match at the patient's bed, the duration of the transfusion, monitoring the patient before, during and after the transfusion, the state of completion of the post-transfusion card and reporting of possible complications

The data collected were entered and processed in Microsoft Word and Excel 2010 and analysed using Epi info software version 7.2.2.6. The usual descriptive statistics were used to present the characteristics of the sample.

OUTCOMES

We included 85 health workers working in the 7 wards of the Antanambao Toliara University Hospital. Of these, 83.53 % (71) were paramedics and 16.47 % (14) were doctors. Only 9.41% of doctors had ongoing training in blood transfusion and none of the paramedics had any. Regarding the transfusion protocol, 10.58% (9) of staff answered that there was one in their department, corresponding to only one of the seven wards studied. Patient consent prior to transfusion was sought in 96.47% (82) of cases. Transfusion documents and blood orders were completed correctly in 91.76% (78) and 89.41% (76) of cases, respectively. The waiting time between blood order and receipt of the components is shown in Table 1.

The product requested was whole blood in 74.12% (63), Red blood cells (RBCs) in 23.54% (20) and fresh frozen plasma/ platelets in 2.35% (2) of the cases. Available components were whole blood in 98.82% (84), RBCs in 1.18% (1) of cases. The time between receipt of blood and initiation of transfusion is shown in Table 2.

Requests for more than 2 components were found in 60% of cases, but only 45.88% had the requested number of components. A difference of one components bag was found between the components requested and the components delivered in 49.41% (42) of the cases, and a difference of more than 2 components bags was found in 4.71% (4) of the cases.

The age of the components delivered by the blood bank was 0 to 15 days in 97.65% (83) and 16 to 30 days in 2.35% (2) of cases. All the components were brought by the family and without packaging. The method and duration of storage of the

components in the requesting department after delivery of the components are shown in Table 3.

Unused components were sent back to the blood bank in 95.29% (81) of cases and 4.71% (4) were kept in the requesting ward. The identity of the patients, the components and the existing transfusion documents were checked in 100% of cases before a transfusion procedure, as well as the cross-match at the patient's bed.

Transfusion time is shown in Table 4.

The monitoring of the transfusion carried out by the medical staff is shown in Table 5.

The status of the haemovigilance form is shown in Table 6.

Reporting of complications is shown in Table 7.

The types of complication found were pruritus, rash and dyspnoea in 2.32% (2), 1.18% (1), 1.18% (1) of cases respectively.

Table 1: Delivery time of labile blood products

Delivery time of labile blood products	% (n)
0 to 30 minutes	11.76% (10)
30 minutes to 1h	44.70% (38)
1h-2h	30.58% (26)
> 2h	12.94% (11)

Table 2: Time between reception of PSL and transfusion

Time between reception of PSL and transfusion	% (n)
0 to 30 minutes	50.58% (43)
30 to 60 minutes	30.59% (26)
> 60 minutes	18.82% (16)

Table 3: Method and duration of storage of the components in the requesting ward

Method of storage Duration of storage	Refrigerator % (n)	Room temperature % (n)	Total % (n)
0 – 1h	1,18 (1)	68,24 (58)	69,42 (59)
1h – 2H	00 (00)	15,29 (13)	15,29 (13)
>2H	11,76 (10)	3,53 (3)	15,29 (13)
Total n (%)	12,94 (11)	87,06 (74)	100 (85)

Table 4: Transfusion duration

Transfusion duration	% (n)
< 2 hours	1.18% (1)
2 hours to 4 hours	88.24% (75)
> 4 hours	10.55% (9)

Table 5: Monitoring rate by health care staff

Monitoring rate	% (n)
Before transfusion	94.12% (80)
During transfusion	96.47% (82)
After transfusion	90.59% (77)

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Table 6: Status of haemovigilance form

Status of haemovigilance form	% (n)
Correct	42.35% (36)
Incorrect	9.41% (8)
Not done	48.24 (41)

Table 7: Reporting of complications

Reporting of complications	% (n)
Presence of complications	4.71% (4)
No complications	49.41% (42)
Complications not reported	45.88% (39)

DISCUSSION

The mastery of transfusion practice concerns all health personnel involved in the transfusion process. We chose these 7 wards because they are the ones that require the most components. At the University Hospital Antanambao Tuléar, the prescription of the transfusion is ensured by the doctor of the department and the paramedics ensured the execution of the transfusion act. However, these paramedics have not had any training on transfusion, whereas in the literature, all clinicians, nurses, laboratory/blood bank personnel, pharmacists and other personnel involved in the clinical process of transfusion must be trained [4]. Even if the prescription of transfusion should be done by doctors as it is a medical prescription, this is not always possible due to the lack of doctors in some departments who, due to the workload, have to share their tasks with other health care workers. The absence of the transfusion protocol in 06 wards may be related to the small number of trained staff. The others who are not trained may therefore be unaware of the importance of the transfusion protocol and what it should contain. However, the absence of a transfusion protocol puts transfusion safety at risk because everyone performs the transfusion act according to their knowledge and habits. There is still a fraction of health care workers who do not fill in the transfusion files correctly because on the one hand they were unaware of the importance of the transfusion file and on the other hand they did not have the time because of their insufficient number of staff and their overload of work.

The transfusion document provides all the information needed to ensure the transfusion safety of the patient. Although consent must be required, it was not given in a situation of extreme urgency, yet lack of consent is a breach of medical ethics and must be given in any situation. Consent may come from the patient him/herself, from the parents if the patient is a minor and from the close person if the patient is unable to express him/herself. Although in many situations the need for blood transfusion is an immediate life-saving emergency, the delivery time was still long. This could be explained by the low number of staff responsible for transport, but also by the different procedures in the laboratory before the delivery of components, sometimes donors still have to be sought because the blood requested was not available at the blood bank. However, the delivery time of the components must take into account the clinical condition of each patient according to the three-level classification of transfusion urgency [8,9]. The most requested and available components were whole blood. This could be explained by the lack of knowledge of prescribers on the different transfusion indications which consist in substituting only the missing elements, or by the frequent absence of fresh frozen plasma at the blood bank. At the city blood bank, the centrifuge for obtaining frozen plasma, RBCs and Platelets does not work, nor does the stirrer for the Platelets. To obtain RBCs, it puts the bag in an upright position before separating the red blood cells and the plasma. The requested and the available components are therefore two interdependent parameters. However, whole blood transfusion exposes several risks such as overload and infection. Indeed, an American study reported a higher rate of transmission of infectious diseases for patients who received all blood [10]. The use of unspecified whole blood is also a waste of components that do not even need to be brought in. More than half of the patients did not receive the number of bags requested. The study carried out at Yalgado University Hospital also found 62. 61% of the unsatisfied transfusion needs [11]. This lack of components is common in the world but very significant in Africa [1,2]. The bag age requested was mostly 0 to 15 days. This may reflect the lack of components stock at the blood bank level. The transport of the components was provided by the patient's family because the number of staff assigned to the work was not available or insufficient, whereas a component is a medical product whose transport must meet the corresponding standards to ensure its conformity. The method of storage of the components in the ward prior to administration ensures the quality of the components and the efficacy of the transfusion. It must also meet the criteria for the conservation of components. A fraction of the unused components was kept by the ward and used for another patient, which is not in line with the transfusion rules as a component is issued specifically for one patient. The ultimate check before the transfusion and at the patient's bed is the responsibility of the components administrator, because if there is any discrepancy, the transfusion should not be performed. The duration of transfusion depends on the components used. The rate of transfusion also depends on the hemodynamic status of the patient and whether or not transfusion reactions are present.

In the emergency room of the Cocody Hospital, the average transfusion time was much longer than our study result, it was 14.66 ± 5.4 hours [12]. Transfusion monitoring should be performed to detect transfusion incidents early so that caregivers can take immediate action. Although the reporting of transfusion incidents is mandatory [13], in our study, many health care workers did not fill in the haemovigilance form, however, it allows the recording and tracking of the various incidents that occur in a transfusion context in order to investigate the incident. Failure to complete the haemovigilance form does not provide the exact number of transfusion complications as it must be completed whether or not there is a transfusion complication. This study provided concrete data on the side on which the clinical practice of transfusion is already mastered but also and above of all the gaps that still need to be rectified and reinforced in our Hospital. Nevertheless, this study is limited to 7 services only and was

based on questionnaires but not on an observation therefore the answers given can be erroneous therefore an extended study on all services and observational makes it possible to obtain complete and accurate data.

CONCLUSION

Blood transfusion plays an important role in the medical care of patients. The trivialisation of the transfusion procedure due to the lack of training of health care workers and the absence of a transfusion protocol leads to non-conformity of the performance of the transfusion procedure because each person practices it according to his or her on-the-job training or goodwill. This current state of transfusion practice exposes patients to many potentially life-threatening risks. Much work remains to be done on improving the quality of transfusion within its healthcare workers.

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