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Original article

Evaluation of blood donors questionnaire in a developing country: The case of Gabon

*Évaluation du questionnaire de présélection de donneurs de sang dans un pays en développement :
le cas du Gabon*

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Abstract

Background. – Blood transfusion is a life-saving therapeutic act without alternative. Each blood transfusion carries the risk of blood-borne pathogens transmission. The present study, is the first establishing the usefulness of blood donors screening questionnaire in the setting of the Gabonese National Blood Transfusion Center.

Study design. – Nine hundred and thirty-four blood donors aged between 18 and 48 years old were initially enrolled and submitted to physical examination (body-mass index and blood pressure). After physical examination 854 donors were judged fit for blood donation and were randomly distributed in two groups. The first group of donors did not take the screening questionnaire; whereas the second group went through the screening questionnaire. Both groups were then tested for human immunodeficiency virus, hepatitis B, hepatitis C and syphilis.

Results. – Data revealed a seroprevalence among the donors of 2.5%, 2.5%, 1.1%, and 3.3% for the human immunodeficiency virus, hepatitis B, hepatitis C and syphilis markers respectively. In the Gabonese setting, blood donors' screening questionnaire reduced respectively by 0.6%, 0.35% and 1.3% the proportion of hepatitis B, hepatitis C and treponema pallidum seroreactive donors being selected for donation. The questionnaire had no positive effect on discriminating human immunodeficiency virus positive donors.

Conclusion. – Blood donors' seroprevalence of blood-borne pathogens is relatively important in our setting. Blood donors' screening questionnaire reduced the proportion of hepatitis B, hepatitis C and syphilis seropositive blood donors. The questionnaire did not effectively discriminate human immunodeficiency virus-infected donor candidates.

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Keywords: Transfusion-transmissible infections; Blood donors; Questionnaire; Developing country

Résumé

Contexte. – La transfusion sanguine est un acte thérapeutique sans alternative. Chaque transfusion sanguine comporte un risque de transmission de pathogènes à diffusion hématogène. La présente étude est la première traitant (1) de la séroprévalence des marqueurs du virus de l'immunodéficience humaine (VIH), l'hépatite B, l'hépatite C et la syphilis des donneurs de sang au gabon ; (2) de l'utilité du questionnaire de sélection des donneurs de sang dans le contexte Gabonais.

Méthode. – Neuf cent trente-quatre donneurs de sang âgés entre 18 et 48 ans ont été initialement recrutés et soumis à un examen physique (indice de masse corporelle et pression artérielle). Après examen physique, 854 donneurs jugés propres au don de sang ont été répartis aléatoirement en deux groupes. Le premier groupe de donneurs n'a pas été soumis au questionnaire de sélection, tandis que le second groupe est passé par le questionnaire de sélection. Les deux groupes ont ensuite été testés pour le VIH, l'hépatite B, l'hépatite C et la syphilis, mais pas pour le VIH.

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Résultats. – Les données ont révélé une séroprévalence chez les donneurs de 2,5 %, 2,5 %, 1,1 % et 3,3 % pour le VIH, l'hépatite B, l'hépatite C et la syphilis marqueurs respectivement. Dans le contexte Gabonais, questionnaire de sélection des donneurs de sang réduits respectivement de 0,6 %, 0,35 % et 1,3 % la proportion de donneurs séronégatifs pour l'hépatite B, l'hépatite C et *treponema pallidum*. Le questionnaire n'a eu aucun effet positif sur la discrimination des donneurs VIH positifs.

Conclusion. – la séroprévalence de pathogènes à diffusion hématogène chez les donneur Gabonais est relativement importante. Le questionnaire de sélection des donneurs de sang réduit la proportion des donneurs séropositifs pour l'hépatite B, l'hépatite C et la syphilis, mais pas pour le VIH. © 2014 Elsevier Masson SAS. Tous droits réservés.

Mots clés : Infections transmissibles par la transfusion ; Donneurs de sang ; Questionnaire ; Pays en développement

1. Introduction

Blood transfusion remains an essential therapeutic act without alternative. With each transfusion there is a risk of blood-borne pathogens transmission, including human immunodeficiency virus (HIV), hepatitis B virus (HBV), hepatitis C virus (HCV) and syphilis [1,2].

In developing countries blood transfusion is still challenging considering the high prevalence of blood-borne pathogens and the difficulties in ensuring safe blood supply [2–4]. The implementation of reference screening tests like nucleic acid testing (NAT) or enzyme immunoassays (EIA) for all collected blood is still an exercise beyond reach for these countries with limited resources. Donor selection is crucial in improving safe blood collection. Selection of blood donors with a low risk for transfusion-transmissible infections is the essential part of the process [5–7]. Donor questionnaire has been implemented in some countries for years and is thought to improve blood recipient safety [6–9].

In sub-Saharan Africa, although the medical history screening questionnaires are also used [10,11], countries evaluations of its effectiveness in order to develop a more cost-effective donor selection process are scarce.

The present study aimed to establish the usefulness of blood donors screening questionnaire in the setting of the Gabonese National Blood Transfusion Center.

2. Material and methods

The present study was carried out at the Gabonese National Blood Transfusion Center (CNTS) in Libreville where routine donor selection process includes:

- a physical examination;
- a screening questionnaire;
- blood tests for blood-borne pathogens.

Study design is described in Fig. 1. Briefly, 934 first time blood donors aged between 18 and 48 years old were initially enrolled for this study. Seventy-six were excluded after the physical examination (body-mass index and blood pressure). The remaining 854 were randomly distributed in two groups. To the first group of donors, no questionnaire was administered whereas the second group we administered a questionnaire.

Questionnaire deferral criteria are listed in Table 1. To ensure that respondents produce honest responses, it was explained to them that the CNTS collects personal health information and safeguards its confidentiality and privacy in accordance with health care workers patients' confidentiality principles. Both groups were then tested for human immunodeficiency virus (HIV), hepatitis B (HBV), hepatitis C (HCV) and Siphilis (TPHA). Donors HIV status was assessed using Genscreen Ultra HIV Ag-Ab from Bio-Rad (Marnes-la-Coquette, France). HBV and HCV diagnosis was done using Monolisa HBS ag Ultra and Monolisa HCV ag Ultra from Bio-Rad (Marnes-la-Coquette, France). TPHA diagnosis was done using Siphilis EIA II total Antibody (Bio-Rad, Marnes-la-Coquette, France).

2.1. Ethical issue

All participants were duly informed on the study and gave their consent before entering the study. For the study The National Blood Transfusion Centre procedures were implemented in term of counseling and standard care.

3. Results

Of the 444 donors who took blood donors screening questionnaire 83 were excluded by it and 361 selected for blood donation. Thus the exclusion rate was 18.7%, which was higher than the 8.1% physical examination exclusion rate.

3.1. Sero-prevalence of transfusion-transmissible transfusion-transmitted infectious diseases (TTIs)

Comparing the donors selected after questionnaire and the donors not questioned for HIV, HBV HCV and TPHA seroreactivity, data showed among donors who undertook the questionnaire a seroprevalence of 2.5%, 2.5%, 1.1%, and 3.3% for HIV, HBV, HCV and TPHA markers, respectively. Donors who were not asked to take the questionnaire showed a prevalence of 1.45%, 3.1%, 1.45% and 4.6% for HIV, HBV, HCV and TPHA markers, respectively. Undetermined results were 1.44% higher in donors who were not submitted to the questionnaire compared in donors selected after questionnaire. The rates of undetermined test results were: 1.94% in donors screened by the questionnaire and 3.38% in donors not submitted to the questionnaire.

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