



Revista Brasileira de Hematologia e Hemoterapia Brazilian Journal of Hematology and Hemotherapy

www.rbhh.org



Original article

Risk factors for deferral due to low hematocrit and iron depletion among prospective blood donors in a Brazilian center



Eloísa Tedeschi Dauar^{a,b}, Giuseppina Maria Patavino^b, Alfredo Mendrone Júnior^b, Sandra Fátima Menosi Gualandro^c, Ester Cerdeira Sabino^c, Cesar de Almeida-Neto^{b,c,*}

^a Diagnósticos da América (DASA), São Paulo, SP, Brazil

^b Fundação Pró-Sangue Hemocentro de São Paulo, São Paulo, SP, Brazil

^c Faculdade de Medicina, Universidade de São Paulo (USP), São Paulo, Brazil

ARTICLE INFO

Article history:

Received 25 March 2015

Accepted 27 May 2015

Available online 11 August 2015

Keywords:

Blood donors

Anemia

Iron deficiency

Risk factors

Ferritin

ABSTRACT

Objective: Deferral of blood donors due to low hematocrit and iron depletion is commonly reported in blood banks worldwide. This study evaluated the risk factors for low hematocrit and iron depletion among prospective blood donors in a large Brazilian blood center.

Method: A case-control study of 400 deferred donors due to low hematocrit and 456 eligible whole blood donors was conducted between 2009 and 2011. Participants were interviewed about selected risk factors for anemia, and additional laboratory tests, including serum ferritin, were performed. Bivariate and multivariate analyses were performed to assess the association between predictors and deferral due to low hematocrit in the studied population and iron depletion in women.

Results: Donors taking aspirins or iron supplementation, those who reported stomachache, black tarry stools or hematochezia, and women having more than one menstrual period/month were more likely to be deferred. Risk factors for iron depletion were repeat donation and being deferred at the hematocrit screening. Smoking and lack of menstruation were protective against iron depletion.

Conclusion: This study found some unusual risk factors related to gastrointestinal losses that were associated with deferral of donors due to low hematocrit. Knowledge of the risk factors can help blood banks design algorithms to improve donor notification and referral.

© 2015 Associação Brasileira de Hematologia, Hemoterapia e Terapia Celular. Published by Elsevier Editora Ltda. All rights reserved.

* Corresponding author at: Avenida Dr. Enéas de Carvalho Aguiar, 155, 1º andar, 054003-000 São Paulo, SP, Brazil.

E-mail address: cesarnt@uol.com.br (C. de Almeida-Neto).

<http://dx.doi.org/10.1016/j.bjhh.2015.05.008>

1516-8484/© 2015 Associação Brasileira de Hematologia, Hemoterapia e Terapia Celular. Published by Elsevier Editora Ltda. All rights reserved.

Introduction

The high prevalence of anemia is still a public health problem across the world in both rich and poor countries.¹ Globally, anemia affects 1.62 billion people, which corresponds to almost 25% of the population. Iron deficiency is the leading cause of anemia, but it is seldom present in isolation. Low iron intake, poor iron absorption, blood loss as a result of menstruation, parasitic infections and high iron demand during pregnancy and growth are recognized as the main reasons for iron deficiency. Anemia with iron deficiency is an indicator of potentially serious negative public health outcomes for multiple pathways, including iron deficiency of the brain and muscle.²

Blood donation has also been acknowledged as a cause of iron deficiency and anemia. Blood banks always count on repeat donors as a safe source to replenish their stocks. Repeat donors have already experienced the process of donation, have negative test results and are less susceptible to adverse donation reactions. To collect blood from repeat donors is also less expensive and more effective than recruiting new donors.³ However, iron depletion (ID) as a consequence of repeat donations has been known for more than 30 years and is an important adverse event among regular donors.⁴

Worldwide, approximately 10% of blood donation candidates are deferred due to low hematocrit (Hct).⁵⁻⁷ In Brazilian blood centers, 100,000 units are not collected annually because candidates present low Hct.⁸ Consequently, the blood supply is directly affected. The total number of deferrals would even be greater if, in addition to Hct, iron stores were also measured, as iron deficiency appears before low Hct. Finch et al.⁹ found that on average men can donate three times a year and women can donate half of this amount before becoming iron depleted. Generally, to defer a donor is costly and time-consuming. Additionally, donors who are deferred have a lower rate of return for further donations.¹⁰

Although blood centers must maintain a safe and adequate blood supply to attend the demand of patients who need blood, they must also be concerned about the health of their donors. An understanding of the risk factors associated with donor deferral for low Hct and ID can help to improve recruitment of donors, optimize blood collection and increase the offer of products to save lives without damaging other lives. Moreover, blood donors identified with anemia or ID can be referred for treatment. The aim of this study was to evaluate risk factors related to low Hct and ID among prospective blood donors in a large Brazilian blood center.

Methods

A case-control study was conducted to evaluate the risk factors related to low Hct levels and ID among 400 individuals deferred for low Hct and 456 eligible blood donation candidates of the Fundação Pró-Sangue (FPS), Hemocentro de São Paulo from 2009 to 2011. FPS in São Paulo, Brazil, is located in the largest public hospital in the city (Hospital das Clínicas).

Annually, FPS collects approximately 120,000 units of blood and provides blood components to more than one hundred hospitals in the metropolitan region of the city. This study was approved by the Ethics Committee of Hospital das Clínicas (# 0115.0.015.000-09).

For each donor deferred due to low Hct, another eligible donor of the same gender, age and donation status was selected. Donors were selected during the different collection periods, from Monday to Friday. Selected donors and candidates who accepted to participate in the study and signed a consent form were interviewed and had an extra blood sample collected for additional laboratory tests.

The Hct cut-off point adopted to qualify candidates for blood donation is 38% for females and 39% for males according to the Brazilian standards issued by the Ministry of Health.

Interviews were conducted by trained physicians and assistant nurses in a private room at the blood center. The following items were asked during the interview:

- (1) Date of birth
- (2) Gender
- (3) Race/ethnicity
- (4) Educational level
- (5) Status of the donor i.e., first-time donor (never donated or donated whole blood once more than five years previously), repeat donor (donors who donated whole blood at least twice in the previous 13 months), and sporadic donors (donors who donated whole blood at least twice in an interval greater than 13 months and less than five years)
- (6) Number of whole blood donations (lifetime and last 13 months)
- (7) Type of diet, general, ovo-lacto-vegetarian or vegan
- (8) Vitamin supplement intake without iron
- (9) Intake of supplements with iron
- (10) Iron pill intake
- (11) Aspirin intake (affirmative answers were considered if the participant had taken at least one pill/week over the previous 12 months)
- (12) Frequency (once a month, more than once a month, in intervals of 40 days), duration (1 to 3 days, more than 3 and less than 1 week, more than one week) and intensity (light, moderate or heavy as indicated by the number of sanitary pads used) of menstrual flow in the last 12 months for women
- (13) Number of pregnancies, including miscarriages, live and still born
- (14) History of smoking and number of cigarettes smoked per day
- (15) History of gastrointestinal (GI) signs and symptoms (lifetime) of stomachache and heartburn, black tarry stools and hematochezia and
- (16) If the participant had ever had an endoscopy.

Additional laboratory tests were performed for each participant. This included the following tests: hemoglobin level (Hb - g/dL), Hct (%), mean corpuscular volume (MCV), mean corpuscular hemoglobin (MCH), mean corpuscular hemoglobin concentration (MCHC), serum iron ($\mu\text{g/L}$), transferrin saturation (%), transferrin ($\mu\text{g/L}$), total iron binding capacity (TIBC)

Download English Version:

<https://daneshyari.com/en/article/3332981>

Download Persian Version:

<https://daneshyari.com/article/3332981>

[Daneshyari.com](https://daneshyari.com)