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Pattern of Anemia amongst Deferred Blood Donors

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Abstract

Background: To study the prevalence and severity of anaemia in otherwise healthy persons who have reported for blood donation and to study the morphologic type of anaemia in Aneamic cases among reported blood donors.

Subjects and Methods: This Cross sectional study was conducted at Tertiary Care Hospital in Rajasthan. Total 5000 reported donors were interviewed during this period. Donor selection criteria laid down by the Drug and Cosmetic Act of India. Criteria laid down by director general Health Services, New Delhi and Drug's Controller of India were strictly followed.

Results: Overall females (89.70%) were found to have higher deferral rate due to anemia than male counterparts (53.84 %). This further shows that both females and males have a very high prevalence rate of anemia

Conclusion: The data of the present study shows that there is a need to understand the problem and to educate the regular donors regarding iron deficiency and iron supplementation. This is our responsibility towards these very important persons of society who give gift of life to needy patients in morbid situations.

Keywords: Blood donor, Anaemia, Deferral

Introduction

In current medical and surgical practice, a blood transfusion can be a vital, life-saving procedure. But it requires an adequate supply of safe blood from a healthy donor. For this, proper healthy and safe donor selection is necessary in addition to the laboratory screenings of blood bags for infectious diseases.

It is essential that the blood collection process does not harm either the donor or the recipient. This is achieved

by having donor deferral criteria and stringent screening of collected blood for possible Transfusion Transmissible Infections. [1]

The deferral of blood donors is a painful and sad experience for the blood donors as well as the blood donation centres. Deferring prospective donors often leaves them with negative feelings about themselves as well as the blood donation process. [2] Additionally these donors are less likely to return for blood donation in the future. [3] A large majority of the donor population in a developing country, like India, is deferred due to Anaemia. [4] Iron deficiency anaemia account for 841000 deaths annually worldwide. Africa and part of Asia bear 71% of global mortality burden. [5]

All donors should be screened for anaemia prior to donation. [6] The minimal haemoglobin cut-off for donor selection was set at 12.5gm % for both male and female donors. [7] Each unit of transfused whole blood or packed red cells is expected to increase haemoglobin by about 1 gm/dl in a patient of 70 kg weight and who is not having active blood loss.[8] Iron lost from one unit blood donation constitutes to roughly 6% and 9% of total body iron in men and women with an average of 4.0 g and 2.3 g total body iron, respectively. [9] Haemoglobin reaches to its lowest level 1 to 2 weeks after donation and reaching to its pre-donation levels after 3-4 weeks. [10]

Short intervals between donations may increase the risk of iron depletion, while longer intervals and/or iron supplementation after donations may prevent iron deficiency.

The short-term temporary deferral due to anaemia can have a very negative impact on blood donor return rate and subsequent blood donation. These donors should be appropriately counselled and managed to improve the efficiency of the voluntary blood donation programme under National Blood policy of India.

Subjects and methods

This study was conducted at blood bank at Tertiary Care Hospital Rajasthan. Donors were carefully screened and counseled (pretest) by trained personnel after complete medical examination and satisfactorily answering the donor questionnaire.

Total 5000 reported donors were interviewed during this period. Donor selection criteria laid down by the Drug and Cosmetic Act of India. Criteria laid down by director general Health Services, New Delhi and Drug's Controller of India were strictly followed. Each donor was evaluated based on detailed medical history and physical examination of donors with regard to hemoglobin, blood pressure, RR, temperature, and pulse rate. All the persons with haemoglobin less than 12.5gm% were deferred and further studied.

Haemoglobin estimation was performed by HemoCue method. Venous blood samples were collected in EDTA (ethylene diamine tetra acetic acid) anti-coagulated tube and plain tube from the persons whose haemoglobin was less than 12.5 gm % by HemoCue method. The EDTA anti-coagulated blood was used for complete blood count. The complete blood count was carried out by using fully automated haematology analyzer. Peripheral Blood Film were prepared and stained with Leishman stain and Peripheral Blood Films were examined under oil immersion lens of microscope for morphological typing of anaemia.

Results

Total 5000 pre donation screening interviews were conducted at our blood bank unit and various blood donation camps during the study period, of which 4600 were males (92.0%) and 400 (8.0%) were females. Here, females contributed a small proportion of 8.0% only. Voluntary blood donation camps were held average 80-90 per year in Jaipur city and nearby Rural and Urban

areas. 4610 (92.2%) were voluntary and 390 (7.8%) replacement. Out of 5000 registrations, 4140 were found fit for donation. Total number of deferrals due to various reasons were 860 giving an overall incidence of 17.20%. Out of 940 deferrals, 559 were males and 301 were females. The deferral rate among male donors was 12.15% and among female donors was 75.25%.This shows that females were found to have higher deferral rate among female donors than males. From this study we found that temporary causes of deferral were 792 (92.09%) of the total causes while permanent were only 68 (7.91%).. In our study, the most common cause of deferral was anemia both in male and female donors. The next common cause was low body weight. It is observed that the leading reason for rejecting `donors was low Haemoglobin levels.

Table 1: Distribution of deferrals according to gender

	No. of total registrations	No. of deferrals	Percentage deferrals
Male	4600	559	12.15%
Female	400	301	75.25%
Total	5000	860	17.20%

Table 2: Deferral due to Anemia among total registered donors

	Total Registrations	Deferral due to anemia	Percentage deferral due to anemia
Males	4600	301	6.85%
Females	400	270	67.50%
Total	5000	571	11.42%

Donors deferred due to anemia were 571, so the prevalence of anemia among donors was 11.42 %. Out of the total 571 anemic donors 301 were males and 270 were females. This shows that females have higher prevalence of anemia deferral among themselves as compare to male counterparts.

Table 3: Prevalence of Anemia among Deferred Donors

	Total Deferral	Deferral due to anemia	Prevalence of anemia among deferred donors
Males	559	301	53.84%
Females	301	270	89.7%
Total	860	571	66.40%

Overall females (89.70%) were found to have higher deferral rate due to anemia than male counterparts (53.84 %). This further shows that both females and males have a very high prevalence rate of anemia.

Discussion

Total 5000 pre donation screening interviews were conducted at our blood bank and various blood donation camps during the study period, of which 4600 were males and 400 were females. Most of the donors were males; females accounted for only 8.00% of the donors. This shows that even in today's era awareness about blood donation is much less in females as compared to males and there is grave need to motivate them, to come forward and give their contribution in this noble cause.

The rate of deferral differs from region to region and sometimes in the same region and one centre to another. In our study the Deferral Rate was 17.20%.

Table 4

Studies	Year	Donor Deferral Due To Anaemia
Bahadur et al[11]	2009	15.5%
S Awasthi et al[12]	2009	33.5%
Naveen et al[13]	2009	55.8%
Rehman et al[14]	2012	11.43%
Sareen R et al[16]	2012	39.42%
Sadhana Mangwana et al[17]	2013	25.68%
Ramesh Patil et al[18]	2014	64.9%

Krishna et al[15]	2015	32.8%
Dhaval et al[19]	2015	24.11%
Present Study	2022	66.40%

Conclusion

Present study proved that anaemia is a common health problem faced by the society. Females particularly of the reproductive age group are more commonly affected than males. Most common cause of anaemia is nutritional deficiency of iron. Health facilities can target their approach towards the same by providing nutrition education and preventive supplements. The haemogram reports should be measured at regular intervals of the same population and record should be maintained by the department implemented by the government, so as to know the effectiveness of the measures.

Rationalize and revalidate of strategies should be made to educate, motivate, and treat donors deferred due to anemia/low haemoglobin, so that they can be recruited again. All efforts should be made to ensure safe motherhood.

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