

Prevalence and Changing Trends of Syphilis among Blood Donors in a Tertiary Care Hospital, Hyderabad, India

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Abstract

Blood transfusion is a life-saving procedure for millions in current medical and surgical practices. However it also has the risk of transmitting Transfusion Transmitted Infections (TTIs) like HIV, hepatitis B and C, syphilis, malaria etc. In India, it is mandatory to test blood units for HIV 1 and 2, hepatitis B, hepatitis C, syphilis and malaria. The whole blood and component units that are reactive should be discarded. The present study was done retrospectively from January 2016 to December 2018 (a 3 years study) in the Department of Transfusion Medicine and Immunohematology, Nizam's institute of Medical Sciences, Hyderabad, Telangana State, India. During these three years the total donors were 55,306. Voluntary donors were 13.20 % and replacement donors were 86.80 %. A total of 148 donors were reactive for syphilis. Predominant age range reactive for syphilis was 26-35 years (66.89 %), followed by 36-45 years (19.59 %). 148 (0.27 %) donors were reactive for Syphilis. Number of replacement donors positive for syphilis were 147 whereas the number of voluntary donors positive for syphilis were only one. 142 donors were married and 6 were unmarried. All the syphilis reactive donors were males. 95 donors were from urban areas, whereas 53 were from rural areas. Increasing trend of syphilis reactivity was observed in our geographical area. Voluntary blood donations are safer than replacement. Education and public awareness programs would go a long way in suppressing these infections and thereby preventing TTIs and also wastage of precious blood units.

Keywords: Blood Donations, Transfusion Transmitted Infections (TTIs), Syphilis.

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INTRODUCTION

Blood transfusion is a life-saving procedure for millions in current medical and surgical practices [1]. However it also has the risk of transmitting Transfusion Transmitted Infections (TTIs) like HIV, hepatitis B and C, syphilis, malaria etc [2]. In India, it is mandatory to test blood units for HIV 1 and 2, hepatitis B, hepatitis C, syphilis and malaria. The whole blood and component units that are reactive should be discarded. Syphilis is a classical venereal disease, caused by *Treponema pallidum* subspecies *pallidum*. Various studies have reported an increase in the prevalence of syphilis in the United Kingdom (UK), United States of America (USA), and India [3-6]. In the present study, we have analyzed the prevalence of syphilis among the blood donors.

MATERIALS AND METHODS

The present study was done retrospectively from January 2016 to December 2018 (time duration 3 years) in the Department of Transfusion Medicine and

Immunohematology, Nizam's institute of Medical Sciences, Hyderabad, Telangana State, India.

Inclusion and Exclusion Criteria

We have included all the donors who were eligible for blood donation as per our standard operating procedures and excluded the donors who were not fitting into the eligible criteria.

Collection of sample: We have collected 2 ml blood in a labeled pilot tubes at the time of collection of blood from donor tubing of the blood units.

Samples were tested for syphilis by Third Generation Double Antigen Sandwich Enzyme Linked Immunosorbent Assay (ELISA) for detection of antibodies (TREPOLISA 3.0-Tulip Diagnostics private limited, India) to *Treponema pallidum* in the serum or plasma.

RESULTS

During these three years the total donors were 55,306. Voluntary donors were 7301 (13.20 %) and replacement donors were 48005 (86.80 %) (Figure-1).

Table-1 shows age-wise distribution of syphilis reactive donors. A total of 148 donors were reactive for syphilis. Predominant age range reactive for syphilis was 26-35 years- 99 cases (66.89 %), followed by 36-45- 29 cases (19.59 %). No reactive cases were seen below 25 years and above 55 years (Table-1).

Out of 55,306 donors screened, 148 (0.27 %) donors were reactive for Syphilis. In 2016, number of syphilis reactive cases were 35 and in 2017, 48 cases. In 2018, the syphilis reactive cases increased to 65 (Table1). Number of replacement donors positive for syphilis were 147 whereas the number of voluntary donors positive for syphilis were only one (Figure-3).

Among the 148 donors reactive for syphilis, 142 donors were married and 6 were unmarried. All the syphilis reactive donors were males. 95 donors were from urban areas, whereas 53 were from rural areas.

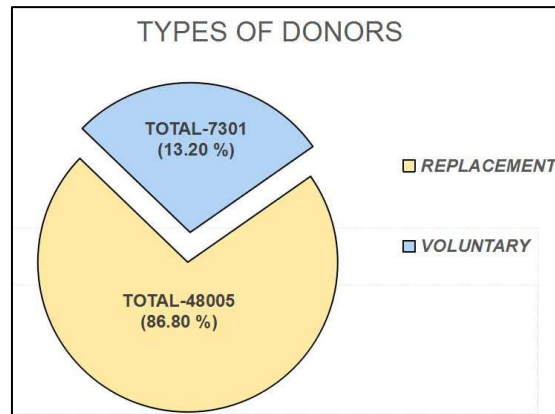


Fig-1: Pie diagram showing the type of donors

Table-1: Age-wise distribution of syphilis positive donors

Age range (years)	Reactive samples	Percentage (%)
18-25	0	0
26-35	99	66.89
36-45	29	19.59
46-55	20	13.52
Total	148	100

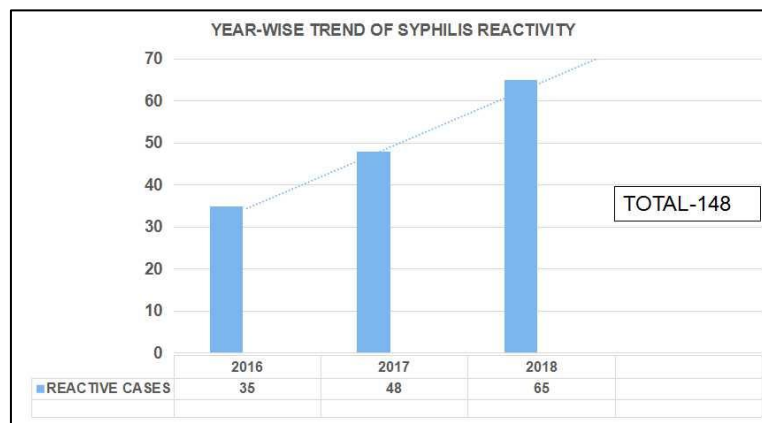


Fig-2: Bar Diagram showing year-wise increasing trend of syphilis reactivity

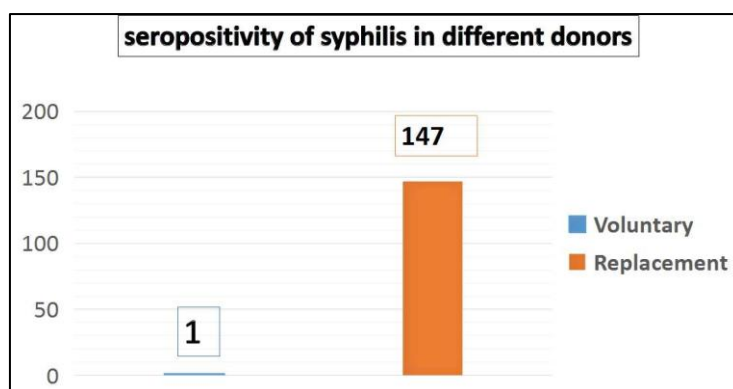


Fig-3: Bar diagram showing seropositivity of Syphilis in different donors

DISCUSSION

Syphilis can be transmitted during direct sexual contact, through blood transfusions, and from a pregnant woman to her unborn child [7]. However, blood transfusion now play a minor role due to the available sensitive methods of detection, as well as routine screening of blood products for syphilis. Screening for syphilis is compulsory for routine blood transfusions. Syphilis has re-emerged as a health concern in a number of developed nations over the past decade [7].

In our study the voluntary donors were 13.2 % (7301) and replacement donors were 86.8 % (48005). The study conducted by Srikrishna *et al.*, [8] and Kakkar *et al.*, [9] also the replacement donors (98.5 % and 94.7 % respectively) were more compared to voluntary donors. In contrast, the study conducted by Bhattacharya *et al.*, [10] and Pallavi *et al.*, [11] shows predominance of voluntary donors (94.6 % and 64.78 % respectively).

In our study, syphilis was predominant in the age group of 26-35 years (66.89 %) comparable with the study of Kangeshan *et al.*, (50%). [12]

Prevalence of syphilis among the donors was 0.267 % which is comparable with the study of Singh *et al.*, (0.26 %) [13]. In other studies conducted by Srikrishna *et al.*, [8], Garg *et al.*, [14], and Arora *et al.*, [15], the prevalence of syphilis among the donors was 1.6 %, 0.22 % and 0.9 % respectively. In our study we have observed an increasing trend of prevalence of syphilis among the blood donors whereas decreasing trend was reported in a study conducted by Sharma *et al.*, [16].

High prevalence of syphilis was found among replacement donors than voluntary donors in the studies reported in the literature. [12, 13, 17] Our study was also in agreement with the above mentioned studies as there was only one case of syphilis among the voluntary donors.

In our study, married men had high prevalence of syphilis reactivity than unmarried; donors from urban area had high prevalence than rural areas.

CONCLUSION

High prevalence of syphilis was noted in our geographical area; more cases of syphilis reactivity were observed in replacement donors than voluntary donors. The trend of syphilis reactivity among the donors was also increasing. Education and public awareness programs would go a long way in suppressing these infections and thereby preventing TTIs and also wastage of precious blood units.

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