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Pathology

INFECTIOUS DISEASE MARKERS IN BLOOD DONORS-A STUDY FROM A TERTIARY CARE TEACHING HOSPITAL

Dr.Praveen Kumar Associate Professor, Department of Pathology, HIMS, Lucknow, UP, Pin-225003

Dr Brajendra kumar* Professor and Dean , Department of Medicine, RIMS,Raipur , CG ,India-492006.
*Corresponding Author

ABSTRACT The infectious disease markers for which blood donors are screened include anti-human immunodeficiency virus (HIV), hepatitis B surface antigen (HBsAg), anti-hepatitis C virus (HCV), rapid plasma reagin (RPR) card test for syphilis and malarial parasites.A total of 1000 donors were screened over three years to assess the prevalence of infectious disease markers. Screening for anti-HIV I and II, HBsAg and anti-HCV was carried out by enzyme linked immunosorbent assay (ELISA). Syphilis was tested using RPR card test. Malarial parasite was tested by detection of genus specific plasmodium lactate dehydrogenase.The overall seropositivity for anti-HIV I and II was nine (0.13%), for HBsAg 67 (0.99%), for anti-HCV 13 (0.19%) and for syphilis 42 (0.62%). No sample showed malarial parasites. There was no significant difference (p>0.05) in the seropositivity of various markers between voluntary and replacement donors.

KEYWORDS : Infectious Disease; Blood Donors;screening.

INTRODUCTION

The prevalence of anti-human immunodeficiency virus (HIV), hepatitis B surface antigen (HBsAg), anti- hepatitis C virus (HCV) and syphilis positivity in Indian blood donors is 0.084-3.87%, 0.66-12% , 0.5-1.5% and 0.85-3% respectively. The present study was done to estimate the prevalence of infectious disease markers in the donor population of the blood bank of a tertiary care hospital.

MATERIAL AND METHOD

A total of 1000 units of blood was collected from voluntary and replacement donors over a three year period. Voluntary donors had donated blood either in the blood bank or in camps organised by mobile teams. Replacement donors had come to the centre to donate blood to replace that required by patients and were either relatives or friends of the patient. Professional donors were excluded. Samples were screened by enzyme linked immunosorbent assay (ELISA) kits for anti-HIV I and II, HBsAg and anti-HCV. Third generation anti-HCV ELISA test kits utilizing a combination of antigens with the sequence of both HCV structural and non-structural antigens i.e. Core, E1, E2, NS3, NS4 and NS5 were used. Validity of ELISA tests was assessed by means of acceptance criteria laid down by the manufacturer for the absorbance of reagent blank as well mean absorbance of positive and negative controls present with the test kits. Cut off value for reporting positive results was calculated as per manufacturer's directions. Known positive and negative controls were randomly used as external controls. Screening for syphilis was carried out using rapid plasma reagin (RPR) card test. Malaria screening was done by a rapid test kit for detection of malaria genus specific plasmodium lactate dehydrogenase released from parasitized red cells utilizing the principle of immunochromatography. Reactive samples were retested before being labelled as seropositive. Seropositive blood units were discarded.

RESULTS

A total of 1000 donors were screened over a period of three years, of which 85.67% were replacement and 14.33% voluntary donors. Percentage of HIV seropositivity was of 0.13%. The difference in prevalence in these two groups is not statistically significant (p>0.05). There is no significant change in the prevalence of HIV positivity over the three year period . HBsAg seropositivity overall figure was 0.99%. There is no significant difference in the prevalence of HBsAg positivity in voluntary and replacement donors . There was no significant change in the prevalence of HBsAg over the study period . HCV seropositivity overall was of 0.19%. The difference in prevalence of anti-HCV positivity in voluntary and replacement donors is not significant.

DISCUSSION

Replacement donors (85.67%) constituted the majority of blood donors in our study, a finding similar to other studies . The overall prevalence of HIV seropositivity (0.13%), except for a seropositivity rate of 0.084% reported by Gupta N et al . There was no significant difference in the prevalence between voluntary and replacement donors, unlike other studies, which showed a lower prevalence of HIV positivity in voluntary donors. There was no significant change in prevalence of HIV seropositivity over the three year period of the study. The prevalence of HBsAg seropositivity (0.99%) is similar to that reported by other studies. There was no significant difference in the prevalence rate amongst voluntary and replacement donors which is at variance from other studies , which showed a higher seropositivity in replacement as compared to voluntary donors. There was no significant change in the prevalence of HBsAg positivity in the study period. Anti-HCV positivity (0.19%) was lower than that reported by other studies, without any significant difference in voluntary and replacement donors. Anti-HCV positivity showed a significant downward trend during the study period No significant difference in prevalence was found among voluntary as compared to replacement donors , which is at variance from other studies , which showed a higher positivity among replacement donors.

CONCLUSION

Prevalence of positivity for infectious disease markers among donors in this study is similar to that reported by other studies in India.

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