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PREVALENCE OF SYPHILIS AND MALARIA AMONG BLOOD DONORS IN HOSPITAL BASED BLOOD CENTRE IN ASSAM.

Dr. Rituraj Borsaikia
Post Graduate Trainee, Department of Pathology, AMCH, Mobile number: 7086311678
Dr. Zarika Ahmed
Assistant Professor, Department of Pathology, AMCH, Mobile number: 9435033526
Dr. Aparna Dutta
Associate Professor, Department of Pathology, AMCH Mobile number: 9435702769
Dr. Adity Sharma
Professor and HOD, Department of Pathology, AMCH Mobile number: 9435033505

Subject: Pathology

Full address for Hard Copy with Name: Dr. Rituraj Borsaikia, Department of Pathology, Basic Science Building, Assam Medical College and Hospital, Barbari, Dibrugarh, Assam, PIN: 786002. Mobile No. 7086311678

Abstract:

Background: Blood transfusion and its components is one of the most essential procedures in health care delivery system. Transfusion transmitted infections (TTIs) remain a major concern to patients, physicians and policy makers. Syphilis is an infectious disease caused by *Treponema pallidum (T. pallidum)*. Unprotected sexual contact and transplacental spread during pregnancy are its main spreading ways. It is one of the mandatory serologically tested transfusion-transmitted infections (TTI) recommended by the World Health Organization (WHO)[(1)].Assam being a state of the North East region of India has always been an endemic region for Malaria. **Methods**: The present study was carried out at the State of the Art Blood Centre under the department of Pathology, Assam Medical College and Hospital, Assam, India, retrospectively from April, 2022 to March, 2023 over a period of 1 year. All blood donors who donated blood at this hospital during the study period were included in this study. At our centre Rapid kit tests was used for detection of syphilis and malaria. **Results**: Among the 28792 blood donors, 221 (0.76%) donors were positive for Syphilis/VDRL by rapid card test and Malarial positivity was 0%. **Conclusion**: The knowledge of the prevalence of different TTIs is essential to ensure better blood safety practices. Evaluation of the trends in these data also helps to take timely interventions which is an integral component of hemovigilance.

Keywords: Transfusion transmitted infection, Blood Centre, Blood transfusion, Seroprevalence.

Introduction

Blood transfusion has always been an important therapeutic intervention and there has been continuous efforts to make it safer than ever before through continuous improvements in donor recruitment, screening, testing of donated blood with increasingly sensitive assays[(1)]. Serologic testing for transfusion transmitted diseases had historically been the foundation of blood

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screening. A transfusion transmissible infection (TTI) is any infection that is transmissible from person to person through parenteral administration of blood or blood products for example hepatitis B (HBV), hepatitis C (HCV), Human Immunodeficiency Virus (HIV), syphilis, and less commonly to malaria and other viral infections. Complications of blood transfusions may be mild or can be life‑threatening and hence meticulous pre-transfusion testing and screening for transfusion‑transmissible infections is mandatory. Blood transfusions if not monitored can lead to transmission of these infective agents which may endanger human life and also lead to morbidity and economic burden to the patients. The evaluation of trends in TTI prevalence is essential for blood safety assessment and it can also provide an estimate of the epidemiology of sexually-transmitted infections (STI) in the general population[(3)]. Syphilis is one of the four curable and preventable sexually transmitted infections (STI) apart from chlamydia, trichomoniasis, and gonorrhea. An increase in prevalence has been noted in many developing countries and western countries, especially among specific subgroups since 2000[(2)].

Aims and Objectives

To establish the prevalence of syphilis and malaria among the blood donors in the State of the Art Blood Centre, Assam Medical College and Hospital.

Methods and Methodology

This research is a retrospective analysis of blood donation data from April 2022 to March 2023. Potential blood donors, after registration, filling of donor-health questionnaire, donors are sent for pre-donation counselling. During the counselling process, various necessary details related to blood donation, post-donation care and the outcomes of donation are explained. This is followed by a medical examination, after which donor goes for blood donation. After blood donation, samples are collected and screened for Malaria, Syphilis using rapid kit test and ELISA was used for other TTIs as per standard protocol. If the results of serology were found to be positive, blood unit was discarded as per hospital SOPs and donor was notified of his/her status confidentially. The protocols of this blood centre are set up as per the rules and regulations framed by Assam State Blood transfusion Council (under National Blood Transfusion Council NBTC) and State AIDS Control Organization under National AIDS Control Organisation.

Observations

Table: 1

Name of Blood centre: State of the art blood bank, Assam medical college and hospital												
Particulars	Months											
	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-22	Feb-22	Mar-22
Total units of	2141	2273	2389	2374	2128	2328	2640	2551	2500	2293	2550	2805

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blood collection												
Blood discarded for Syphilis and malarial positivity	10	25	03	09	24	14	22	23	30	18	21	22
Blood discarded for other reasons	10	16	6	23	12	12	12	20	25	13	9	18

Table: 2

Months	Number of units positive	
	Syphilis	Malaria
Apr 22	10	00
May 22	25	00
Jun 22	03	00
Jul 22	09	00
Aug 22	24	00
Sep 22	14	00
Oct 22	22	00
Nov 22	23	00
Dec 22	30	00
Jan 23	18	00
Feb 23	21	00
Mar 23	22	00

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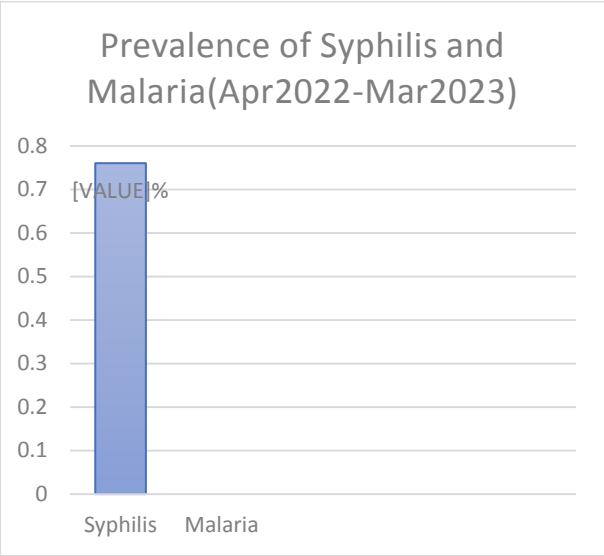
Chart: 3



Results

A total of 28792 blood donations were performed from April 2022 to March 2023 at the Assam Medical College Hospital blood bank lab.

The number of blood donors who were positive for Syphilis/VDRL by rapid card test was 221 out of total 28792 in one year study period with a calculated seroprevalence of 0.76%.

No Malarial positivity found in any of the 28792 donations in the study period of 1 year.

Discussion

TTIs has always been a challenge in blood transfusion practice[3]. Hence, along with a careful donor screening, every unit of blood donated must undergo a careful and stringent process of screening for TTIs.

Among the 5 TTIs, seropositivity percentage for syphilis was found to be the highest and even higher than the state average of 0.53%[4]. There has also been a significant upward trend with respect to the retrospective analysis of the blood centre's previous 2 years data. The number of confirmed cases of syphilis has also shown an upward trend in the recent years in several other parts of India[5].

The prevalence of Malaria has decreased over the years in Assam[6]. No Malarial positivity was found in our study period. Most of the vector biology studies in the North East have focused around *An. baimaii* and *An. minimus*, the major malaria vectors. Climate change, deforestation, urbanization and migration have had a great impact on the current habitat of these established malaria vectors[7]. North east being a malaria endemic region, the elimination efforts carried out

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here will have a great bearing on the overall efforts to eradicate malaria in the rest of India. The Annual Parasitic Incidence (API) reduced by 27.6% in 2018 compared to 2017 and by 18.4% in 2019 as compared to 2018. India has sustained API less than one since year 2012[8].

Based on these results we feel that donor screening must be an integral and stringent part of Blood banking. All the screening procedures must be carefully carried out keeping in mind the concepts of blood safety and patient welfare.

Conclusion

Blood transfusion is often a life saving intervention but if careful screening is not carried out it can also lead to transmission of life threatening infections[9]. Proper and elaborate history taking should be encouraged to screen out donors with high risk behaviours. This will help to minimise the risks of TTIs and promote safe blood transfusions. This justifies the stringent blood safety protocols laid down by the MOHFW, Government of India. Education of the general population is important and efforts must be taken to promote safe and voluntary blood donation. Proper and regular training of medical and para medical staff will also help in improving the entire hemovigilance system.

The continued efforts in mass education has shown its fruits over the years in decreasing the incidence of several STIs. The results may not reflect the true prevalence of syphilis in the community as this was a hospital-based study. Also, many patients with STDs approach private practitioners, and patients coming to our tertiary care centre represent just the tip of this iceberg. Nevertheless, this observation of increased prevalence of syphilis may point towards a need to strengthen the mass awareness and education programmes especially among vulnerable population like drug addicts, HIV positive patients and people practicing unsafe sexual behaviours.

The World Malaria Report (WMR) 2020 released by WHO, which gives the estimated cases for malaria across the world, based on mathematical projections, indicates that India has made considerable progress in reducing its malaria burden. India is the only high endemic country which has reported a decline of 17.6% in 2019 as compared to 2018. The Annual Parasitic Incidence (API) reduced by 27.6% in 2018 compared to 2017 and by 18.4% in 2019 as compared to 2018. India has sustained API less than one since year 2012[8]. The figures and trends between last two decades clearly show the drastic decline in malaria. The malaria elimination target of 2030 looks achievable building on the Union Government's strategic interventions in this regard.

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