the country. Training of treating physicians and knowledge of protocols to deal with emergencies should be mandatory and Government should ensure availability of ASV. However, development of species specific ASV is an enormous challenge because of species diversity in India.

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MALARIA DIAGNOSIS BY REVEALED INFECTIONS BY *PLASMODIUM FALCIPARUM* AND *P. VIVAX* IN INDIA

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Introduction

Malaria is a life-threatening disease caused by parasites that are transmitted to people through the bites of infected female Anopheles mosquitoes. In 2017, there were an estimated 219 million cases of malaria in 90 countries. Malaria deaths reached 435 000 in 2017.The WHO African Region carries a disproportionately high share of the global malaria burden. In 2017, the region was home to 92 % of malaria cases and 93 % of malaria deaths. Malaria is caused by *Plasmodium (P.)* parasites. The parasites are spread to people through the bites of infected female *Anopheles* mosquitoes, called «malaria vectors». There are 5 parasite species that cause malaria in humans, and 2 of these species — *P. falciparum* and *P. vivax* — pose the greatest threat [4].

In 2017, *P. falciparum* accounted for 99.7 % of estimated malaria cases in the World Health Organization (WHO) African Region, as well as in the majority of cases in the WHO regions of South-East Asia (62.8 %), the Eastern Mediterranean (69 %) and the Western Pacific (71.9 %). *P. vivax* is the predominant parasite in the WHO Region of the Americas, representing 74.1 % of malaria cases.

Global malaria incidences have increased by five million in 2016 and mortality remains almost similar, as reported by the World Health Organization (WHO) in 2015.Moreover, India ranks third with respect to total malaria burden in the world and ranks first (51 %) when it comes to global *P. vivax* incidences. One of the major reasons for endemicity of malaria is complex interactions among the pathogen, vector and host, influenced by local environmental determinants. Malaria therefore is considered to be a strictly local and focal disease. Furthermore, malaria is unique among other vector borne diseases with respect to pathogens; wherein five different species of P. have been identified to cause malaria in humans. Therefore, to understand malaria epidemiology in a particular endemic location, there is a need to unravel the actual incidences of infection by different species of P. using a more sensitive diagnostic method (*e.g.* PCR assay, see below). This is especially useful in a country where more than one species of P. is responsible for malaria havoc (*e.g.* India) [1].

The various diagnostic tools currently available for identification of *P. species* inhuman blood samples include light and fluorescence microscopy, immuno-chromatographic lateral flow assays (commonly known as rapid diagnostic tests, RDTs), serology and nucleic acid amplification techniques (NATs) that include PCR and isothermal amplification. Other known techniques for identification of *P. species* are Loop mediated isothermal Amplification (LAMP), flow cytometry *etc*. [3].

Aim

To review the classical as well as atypical clinical presentation of Malaria Diagnosis along with the techniques, methods and outcome.

Material and methods

The analysis and generalization of modern medical scientific literature on this topic.

Research results and discussion

A total of 2,333 finger-pricked blood samples were collected from 11 different collection sitesfrom a period of 2012 to 2015. The sample collection sites were selected based on previous report on the malaria endemicity in that particular Indian state and locations, such as; Delhi, Diphu and Guwahati from Assam, Shankargarh from Uttar Pradesh, Gadchiroli from Maharashtra and from various parts of India. Adopting such an approach, we propose to cover all the differential endemic areas in India due to these two species of malaria parasites (e.g., low, middle and high endemic), so that a comprehensive information on the occurrence of different species of malaria parasites in Indian context could be presented. From each malaria-suspected patient, finger-prick blood sample was collected only once (2–3 drops) and was utilized for all the three diagnostic assays. In the field, bivalent Rapid Diagnostic Test (RDT) kit, Falci-Vax (Zephyr, Biomedical) was used for identification of either single or mixed infections due to *P. falciparum* and *P. vivax* [2].

In the present study, Malaria diagnosis of all these samples was performed by three different methods (Microscopy, bivalent RDT kits and PCR (Polymerase chain reaction) to characterize the samples based on the type of infection caused by either single (mono) infection of either *P. falciparum* or *P. vivax*, or mixed species infections by these two species. Out of the 2,333 samples, microscopic examination resulted in 764 malaria positive cases (32.74 %), of which 324 (42 %) as *P. falciparum* mono infections, 398 (52 %) as *P. vivax* mono infection and 42 (6 %) as mixed infection. At the same time, bivalent RDT kit reported 733 positive malaria cases (31.41 %); 355 (45 %) *P. falciparum* monoinfection, 380 (48 %) *P. vivax* mono infection and 58 (7 %) as mixed infection. However, PCR assay could detect 827 positive cases for malaria parasite infection (35.44 %); of which 350 (42 %) as *P. falciparum* mono-infection, 372 (45 %) as *P. vivax* mono infection and 105 (13 %) as mixed species infection [3].

As a confirmation measure of the PCR diagnostic assay in term of mixed infections, the gel bands were cut for the two species and sequenced and successful yaligned with the respective reference sequences of each species (*P. falciparum* and *P. vivax*). If all the three diagnostic methods were to be graded based on sensitivity, PCR diagnostic method was found to be the most efficient (35.44 %), followed by RDT (34 %) and microscopy (32.74 %) [4].

Conclusion

The results indicate varied distributional prevalence of *P. vivax* and *P. falciparum* according to locations in India, and also the mixed species infection due to these two species. The proportion of *P. falciparum* to *P. vivax* was found to be 49:51, and percentage of mixed species infections due to these two parasites was found to be 13 % of total infections [3].

Considering India is set for malaria elimination by 2030, the present malaria epidemiological information is of high importance. In order to mitigate these limitations, we have collected finger-prick blood samples from 2,333malaria symptomatic individuals in nine states from 11 geographic locations, covering almost the entire malaria endemic regions of India

and performed all the three diagnostic tests (microscopy, RDT and PCR assay) and also have conducted comparative assessment on the performance of the three diagnostic tests. Since PCR assay turned out to be highly sensitive (827 malaria positive cases) among the three types of tests, we have utilized data from PCR diagnostic assay for analyses and inferences [4].

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ФЕНОМЕН ГЕТЕРОХРОМИИ

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Введение

Гетерохромия — это офтальмологический феномен, который характеризуется наличием различной пигментации глазной радужки, как левого, так и одновременно правого глаза или же неоднородное цветовое заполнение определенных участков оболочки радужки лишь только в одном глазу.

Еще в конце XIX в. существовала гипотеза, что у предков человека были исключительно темные глаза. Ханс Эйберг, датский ученый из Копенгагенского университета, провел научные исследования, подтверждающие и развивающие эту идею. По результатам исследований, отвечающий за светлые оттенки глаз ген OCA2, мутации которого отключают стандартный окрас, появился только в период мезолита. Ханс собирал доказательства с 1996 г. и сделал выводы, что OCA2 регулирует выработку меланина в организме, и любые изменения в гене снижают эту способность и нарушают его функционирование, делая глаза голубыми. Однако разные формы одного и того же гена, аллели, всегда находятся в состоянии конкурентной борьбы, причем более темный цвет всегда «выигрывает», в результате чего у родителей с голубыми и карими глазами дети будут кареглазыми, и только у голубоглазой пары может появиться ребёнок с глазами холодных оттенков.

Цель

Рассмотреть по литературным источникам явление гетерохромии.

Материал и методы исследования

Анализ литературных источников.

Результаты исследования и их обсуждение

Гетерохромия глаз с греческого означает «иной цвет» или «различная окраска». Гетерохромия у людей также представлена неоднородной окраской кожных покровов или цветовых характеристик волосяного покрова. Данное явление весьма редко, оно встречается лишь у 2 % всего человеческого населения.

Наиболее часто фиксируемым видом гетерохромии является полная, при которой глаза у человека карего и голубого цвета. Гетерохромию глаз по механизму возникно-