

INCIDENTAL FINDING OF PLASMODIUM PARASITE

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ABSTRACT

Plasmodium infestation is a common infectious disease in India, mostly non- epidemic and they are associated with fever, chills and rigor. Common species are plasmodium falciparum and plasmodium vivax. Plasmodium vivax being the most commonest in India. Here we are presenting one cases of plasmodium vivax as an incidental finding and the person is from a non- endemic area and presented with eosinophilia.

KEYWORDS: Plasmodium vivax, eosinophilia, malaria.

INTRODUCTION

Is an acute and sometimes chronic infection of the bloodstream characterized clinically by fever, anemia and splenomegaly and is caused by parasites of the genus Plasmodium.

Plasmodium parasites were first identified in the late 19th century by Charles Laveran. Malaria is a protozoal disease caused by infection with parasite of genus.

Plasmodium. Transmitted by species of infected female anopheles mosquito there three clinical stages post infection by plasmodium they are cold stage, hot stage, sweating stage.^[1]

Fever clinic are routinely conducted in our Centre and people with fever present to outpatient department along with other patients also. Complete blood count and smear study are done routinely from the patients. A total of 504 symptomatic fever cases from August 2019 to January 2020 peripheral smear study was done in our department out of which 9 cases were found positive for plasmodium infestation. But a patient who presented to outpatient department with non-fever symptoms clinically suspected of eosinophilia related symptoms peripheral smear study revealed Plasmodium vivax infestation.

MATERIAL AND METHODS

27Y/M came to C/O rhinitis sent for eosinophil count. Smear study revealed Eosinophil count 23% and was found positive malarial parasite for Plasmodium vivax incidentally showing mature trophozoite and schizont forms.

RESULT AND DISCUSSION

Plasmodium vivax is common in India. They usually present with fever and rigor in non-endemic zones. In the endemic regions like the sub-Himalayan terrains they often do not present with fever. The life cycle of Plasmodium vivax involves several distinct stages in the insect and vertebrate hosts.

The malaria parasite life cycle involves two hosts. During a blood meal, a malaria-infected female *Anopheles* mosquito inoculates sporozoites into the human host Sporozoites infect liver cells and mature into schizonts, which rupture and release merozoites (In *P. vivax* and *P. ovale* a dormant stage [hypnozoites] can persist in the liver and cause relapses by invading the bloodstream weeks, or even years later.) After this initial replication in the liver the parasites undergo asexual multiplication in the erythrocytes. Merozoites infect red blood cells. The early ring stage trophozoites mature into schizonts, which rupture releasing merozoites. Some parasites differentiate into sexual erythrocytic stages (gametocytes). Blood stage parasites are responsible for the clinical manifestations of the fever. The gametocytes, male (micro gametocytes) and female (macro gametocytes), are ingested by an *Anopheles* mosquito during a blood meal. In the mosquito's stomach, the microgametes penetrate the macrogametes generating zygotes. The zygotes in turn become motile and elongated (ookinetes) which invade the midgut wall of the mosquito where they develop into oocysts. The oocysts grow, rupture, and release sporozoites, which make their way to the mosquito's salivary glands. Inoculation of the sporozoites into a new human host perpetuates the malaria life cycle.

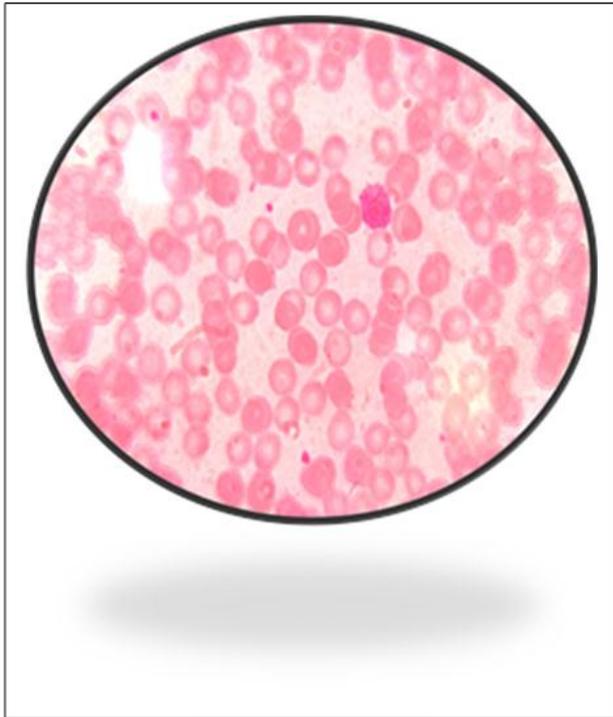


Fig: Shows schizont.

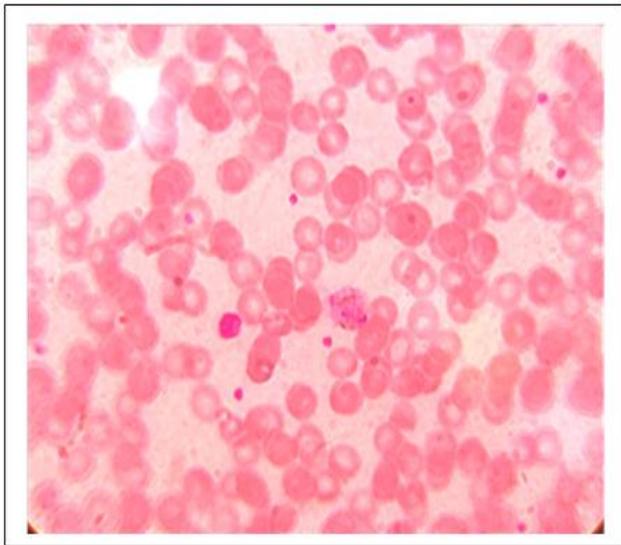


Fig: Shows schizont.

Eosinophilia is a condition in which the eosinophil count in the peripheral blood exceeds $0.45 \times 10^9/L$ ($450/\mu l$). Eosinophils usually account for less than 7% of the circulating leukocytes. A marked increase in non-blood tissue eosinophil count noticed upon histopathologic examination is diagnostic for tissue eosinophilia.^[2]

Eosinophils may be produced as a result of the T-helper-2 (Th-2) immune response and apparently by other immune pathways as well. The balance between Th-1 and Th-2 mediated immune responses is of central importance for the body's response to parasitic infections. Based on data from rodent models and some human studies, a Th-1 immune pathway appears to

predominate in the acute phase of malaria infection, while a Th-2 type immune response is characteristically observed in chronic malaria or the recovery phase.^[3]

Literature reveals *Plasmodium falciparum* has more association with eosinophilia but here we discussed an incidental finding of *Plasmodium vivax* in an eosinophilia patient. The eosinophilia here is TH-2 mediated response as there are no clinical symptoms of malaria.

CONCLUSION

Eosinophilia is a very rare presenting in *Plasmodium vivax* infestation. Our case incidentally *Plasmodium vivax* was infestation in a patient suspected with eosinophilia. Eosinophilia can also be a co factor in *Plasmodium vivax* infection whether related to parasite or not has to be studied in depth.

REFERENCES

1. WHO Expert Committee on Malaria, World Health Organization. WHO expert committee on malaria: twentieth report. World Health Organization, 2000.
2. Mueller I, Galinski MR, Baird JK, Carlton JM, Kochar DK, Alonso PL, del Portillo HA. Key gaps in the knowledge of *Plasmodium vivax*, a neglected human malaria parasite. *The Lancet infectious diseases*, Sep 1, 2009; 9(9): 555-66.
3. IOSR Journal of Dental and Medical Sciences (IOSR-JDMS) e-ISSN: 2279-0853, p-ISSN: 2279-0861. Oct. 2015; 14 10(III): 105-110.