Original Research Paper Zoology

Incrimination Studies on Vector of Malaria in Bareilly

Manoj Gupta | Department of Zoology, Upadhi P.G. College, Pilibhit

ABSTRACT

Among the 10 anopheline species collected during the study period from January 2001 to December 2001 from five localities of Bareilly district the Anopheles culicifacies, An. stephensi, An. fluviatilis, An. maculatus, An. annularis were found most abundant. During the study period from Baheri locality only two specimens of An. fluviatilis were detected positive i.e. each in gut and salivary gland infection which constituted about 2.29% of the total anopheline collection

KEYWORDS incrimination,malaria vector,Bareilly

INTRODUCTION

In India, 58 species of Anophelines are found, of which the following six species viz. An. culicifacies, An. stephensi, An. fluviatilis, An. dirus, An. sundaicus and An. minimus have been considered as the primary vectors of malaria. Besides these, An. annularis, An. philippinensis, An. jeyporiensis and An. varuna have been considered as secondary vectors. (Tyagi, 1992). The Literature research reveals that mosquito faunal survey of Rohilkhand region (which includes Bareilly, Rampur, Pilibhit, Moradabad, Budaun and Shahjahanpur) were carried out by Ansari et al. (1984), Prasad et al. (1984), Sharma et al. (1985), Prasad and Sharma (1990) and S&T Project (1990) besides the contribution made by Puri (1936) who recorded An. fluviatilis from Moradabad. There is almost no record on the occurrence of mosquitoes from Bareilly region after the work done by Ansari et al. (1984). Keeping in the mind that vector incrimination is a prerequisite for understanding malaria situation and for evaluating malaria control when anopheline species coexist, It was decided to undertake a survey for incrimination of vector species in Bareilly.

Methodology

The mosquitoes were captured as adult in morning hours from the Baheri locality of Bareilly during January 2001 to December 2001. In the study area four spots were chosen viz. human dwelling, cattle shed, mixed dwelling and random collections. For identification purpose, the mosquitoes were examined under a binocular microscope and the striking features were noted on a paper. First of all the genera and, thereafter, the species were identified by the procedure as adopted by Christophers (1933), Wattal and Kalra (1961), catalogue of Knight and Stone (1977) and Das et al. (1990). Only the female specimens were dissected to detect the gland and gut infections using standard techniques about the examination of stomach for oocyst and salivary gland for sporozoites. (W.H.O., 1976)

RESULT AND DISCUSSION

The results of dissection of female Anopheline mosquitoes in the locality and numbers found positive for gut / gland infection are given in Tables-1. Among the specimens belonging to 10 Anopheline species dissected during the study period only two specimens of An. fluviatilis collected from Baheri locality between January, 2001 to December, 2001 were found positive i.e. one gland and one gut infections accounting 2.29% out of the 87 specimens dissected (Table-1). Thus it is clear from the results of the present study that An. fluviatilis establishes its role in transmission of malaria in Bareilly district. The result of the present study revealed that only An. fluviatilis was found positive for the gut and gland infections in Baheri locality of Bareilly district. In the past, Nagpal and Sharma (1984) and (1986), Gunasekaran et al. (1989), Kulkarni (1990), Bruce-Chwatt (1991), Tyagi (1992), Sharma (1996), and Mahesh and Jauhari (2001) also mentioned this species as malaria vector but from different places other than the Bareilly district. Besides this, Bruce-Chwatt (1991), Tyagi (1992) and Sharma (1996) considered An. fluviatilis as vector of primary importance. The present findings are close to all the workers as mentioned above with regard to An. fluviatilis to act as malaria vector but differs from Ansari et al. (1984) who found the An. culicifacies as vector of post-monsoon malaria in the villages of Bareilly district. The present findings are also found contrary to the findings of Prasad and Sharma (1990), who observed the An. culicifacies as the primary vector of malaria in the adjacent district Shahjahanpur. Conclusively, it can be said that many biological variations occur in the vector population and they have a bearing in the transmission of malaria. There are a number of workers who have considered different species of Anopheles to act as a vector specially in hill and foothills but in the present findings only An. fluviatilis has been found to be positive to carry malaria infection in Bareilly district.

Table 1 – Showing number of female anopheline mosquitoes dissected in Baheri, District-Bareilly during Jan. 2001 to dec. 2001

Sl. No.	MOSQUITO SPECIES	AVERAGE COLLECTION	ABDOMINAL CONDITIONS				DESSECTION		POSITIVE		SPOROZOITE RATE (%)
			UF	FF	SG	G	GLAND	GUT	GLAND	GUT	
1.	An.culicifacies	184	11	135	37	1	65	65	--	--	--
2.	An. fluviatilis	168	60	99	8	1	87	87	1	1	2.29
3.	An. subpictus	112	14	87	10	1	50	50	--	--	--
4.	An. maculatus	163	0	140	8	15	105	105	--	--	--
5.	An. annularis	156	20	128	8	0	80	80	--	--	--
6.	An. aconitus	62	2	60	0	0	24	24	--	--	--
7.	An. stephensi	168	21	138	3	6	112	112	--	--	--

8.	An. splendidus	128	4	118	6	0	50	50	--	--	--
9.	An. vagus	10	0	10	0	0	7	7	--	--	--
10.	An. pulcherrimus	12	0	12	0	0	--	--	--	--	--

UF = Unfed; FF = Fullyfed; SG = Semigravid; G = Gravid

ACKNOWLEDGEMENTS

Author is thankful of Dr. Mahesh Verma, Department of Zoology, Bareilly College, Bareilly,Dr. R.K. Jauhari, Deptt. of Zoology, D.A.V. P.G. College Dehradoon, Dr. Ramesh Chandra, Deptt. of Zoology S.S.P.G. College Sahjahanpur, for providing their valuable suggestions.

REFERENCES

1. **Ansari, M.A., Batra, C.P. and Sharma, V.P.** (1984). Outbreak of malaria in villages of Bareilly, District U.P.**,Indian J. Malariol.,** 21 (2) : 121-123.
2. **Bruce-Chwatt, L.J.** (1991). Essential Malariology. ELBS/William Heinemann Medical Books Ltd., London, 439 pp.
3. **Christophers, S.R.** (1933). The fauna of British India including Ceylon and Burma, vol. IV. (Today and Tomorrows Printers and Publishers, New Delhi).
4. **Das, P.K., Gunasekaran, K., Sahu, S.S., Sadanandane, C. and Jambulingam, P.** (1990). Seasonal prevalence and resting behaviour of malaria vectors in Koraput district, Orissa. **Indian J. Malariol.,** 27 (3) : 173-181.
5. **Gunasekaran, K., Sahu, S.S., Parida, S.K. Sadanandane, C., Jambulingam, P. and Das, P.K.** (1989). Anopheline fauna of Koraput district, Orissa State, with particular reference to transmission of malaria. **Indian J. Med. Res.,** 89 : 340-343.
6. **Knight, K.L. and Stone, A.** (1977). A catalogue of the mosquitoes of the world (Diptera : culicidae). Entomological Society of America, Box, A.J. 4603. Calvert Road, College Park, Maryland 20740.
7. **Kulkarni, S.M.** (1990). Density patterns of Anophelines and their relation to Malaria in Bastar district, Madhya Pradesh, **Indian J. Malariol.,** 27 : 187-194.
8. **Mahesh, R.K. and Jauhari, R.K.** (2001). Incrimination of Anopheles fluviatilis James 1902 as a vector of malaria in forested areas of Doon Valley. **Indian J. Forestry.,** 24(1): 72-76.
9. **Nagpal, B.N. and Sharma, V.P.** (1986). Incrimination of Anopheles culicifacies as vector of malaria in Orissa. **Indian J. Malariol.,** 32(1) : 57-59.
10. **Prasad, R.N., Gandhi, N.K., Mahajan, R.C. and Garg, S.K.,** (1984). Effect of Chloroquine treatment on comparative level in Plasmodium Knowlesi infected Ressus Monkey. **Indian J. Malariol.,** 21 : 17-20.
11. **Prasad, R.N. and Sharma, S.N.** (1990). Outbreak of malaria in Banda PHC of district Shahjahanpur (U.P.) **Indian J. Malariol.,** 27: 47-50.
12. **Puri, I.M.** (1936). The distribution of Anopheline mosquitoes in India : Additional Records. 1931-1935. **Rec. Mal. Surv. Ind.**, 6 : 177-208.
13. **Sharma, V.P., Chandrahas, R.K., Nagpal, B.N. and Srivastava, P.K.** (1985). Follow up studies of malaria epidemic in villages of Shahjahanpur district, U.P. **Indian J. Malariol.,** 22 : 199-121.
14. **S&T PROJECT** (1990). Malaria Research Centre, Delhi; Annual Report.
15. **Sharma, V.P.** (1996). Re-emergence of malaria in India. **Indian J. Med. Res.,** 103 : 26-45.
16. **Tyagi, B.K.** (1992). Control of malaria vectors in India. **Ind. Rev. Life. Sci.,** 12 : 211-238.
17. **Wattal, B.L. and Kalra, N.L.** (1961). Regionwise keys to the female Indian Anopheles. **Bull. Nat. Soc. Ind. Mal. Mosq. Born. Dis.,** 10 : 55-138.
18. **W.H.O. (1976) : Mannual on practical entomology in malaria vector bionomics and organization of anti-malaria activities, Part - I and II, Ofset Publication.**