

Prevalence of Hemoglobin E among the Paundra Kshatriya of West Bengal

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ABSTRACT: Previous studies have reported incidence of hemoglobin E (Hb E) among some populations of West Bengal. In the present study an endogamous caste of West Bengal, namely the Paundra Kshatriya was examined. The frequency of Hb E gene in this population (0.0375) is more or less similar with the Garo (0.0476), Rabha (0.0611) and Lepcha (0.0209) of the state, among whom selective pressure of malaria is not operating.

KEY WORDS: Hb E, The Paundra Kshatriya, West Bengal.

INTRODUCTION

Hemoglobin E (Hb E) is identified as most common abnormal hemoglobin in Southeast Asia. Reasons behind the high frequency of Hb E gene in this area are possibly the cumulative effect of selection and normal physical fitness of its carriers (Deka et al., 1988). Some populations of the Tibeto-Burman-speaking Bodo ethnic group residing in Assam have shown the highest frequency (0.64) of the hemoglobin E gene (Deka et al., 1988), so far in the world. Das et al. (1991) reported the prevalence of Hb E gene frequency in three endogamous populations (Poliya, Deshi and Tiyor) of the northern part of West Bengal, who are offshoots of the Bodo group. In this communication frequency of Hb E is reported among the Paundra Kshatriya caste of West Bengal, among whom this frequency is not reported so far to the best of authors' knowledge.

MATERIAL AND METHODS

Blood samples from 80 unrelated Paundra Kshatriya, residing in Sonarpur, South 24 Parganas, West Bengal, were collected. These sample were collected under the project, "DNA Polymorphism and Diseases (Epidemiological Studies: Cardiac Diseases)" of Anthropological Survey of India. Five ml of blood sample was obtained in EDTA tubes and sent on ice to the DNA laboratory of Anthropological Survey of India, Kolkata. Detection was done by using BIO-RAD high performance liquid chromatography (HPLC) system.

The Paundra Kshatriya or Pod (caste) forms the largest segment of the heterogeneous population in the study area. They are considered as the disadvantaged population in terms of

overall socio-economic development. The community is a combination of landowning and landless people, who are largely dependent on various kinds of occupation for their subsistence economy (Singh, 2008).

RESULTS AND DISCUSSION

The Paundra Kshatriya shows a low Hb E gene frequency (0.0375). Out of 80 individuals 74 are AA and 6 are AE hemoglobin type. While, no EE hemoglobin type is found in this population (Table 1). The distribution of Hb E genotypes in this population is however, at Hardy Weinberg equilibrium ($\chi^2=1.4527$).

Table-1: Prevalence of Hb E among the Paundra Kshatriya

Population	n	Hemoglobin type			Hb E gene frequency	χ^2 value
		AA	AE	EE		
Paundra Kshatriya	80	74	6	0	0.0375	1.4527

Table-2: Hemoglobin E frequency in West Bengal

Population	n	Hb E gene frequency	Reference
Garo	21	0.0476	Mukherjee et al., (1987)
Rabha	90	0.0611	“
Rajbanshi	63	0.1032	“
Lepcha	215	0.0209	Saha et al. (1987)
Brahmin	109	0.0174	Ghosh et al. (1981)
Kayastha	120	0.0125	“
Vaishya	71	0.0070	“
Poliya	85	0.494	Das et al. (1991)
Deshi	103	0.612	“
Tiyor	95	0.126	“
Paundra Kshatriya	80	0.0375	Present study

Table 2 presents the frequency of Hb E gene in the populations of West Bengal. The Vaishya (0.0070), Kayastha (0.0125) and Brahmin (0.0174) show almost no Hb E. Among the Deshi (0.612), Poliya (0.494) and Tiyor (0.126) the Hb E gene frequencies reach the levels as high as 0.6. It can be remembered that all these three groups are offshoot of the Bodo group. Side by side, the Rajbanshi, a Koch ethnic group is also characterized with considerably high frequency of this gene (0.1032). High incidence of Hb E in Deshi population may be due to founder effect/or local inbreeding (Das et al., 1991). The studied population, Paundra Kshatriya (0.0375) show more or less similar E gene incidence with the Garo (0.0476), Rabha (0.0611) and Lepcha (0.0209) among whom selective pressure of malaria is not operating. It is interesting to note that the Paundra Kshatriya is largest segment of the heterogeneous population in the study area. Other castes residing in Sonarpur are the Brahmin, Kayastha, Sadgop, Dom etc. Though all of them are Hindu by religion they differ

with respect of many cultural traits. The studied population however, shows a dissimilar trend with their neighbouring group in respect of Hb E gene frequency and do not corroborate the ethnographic background.

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