

A Genetic Study on the Lyngam of Meghalaya

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ABSTRACT On the basis of ABO blood groups, Rh factor, PTC taste sensitivity and colour blindness, it is suggested that the Lyngam seems to be ethnically a distinct population. The present findings are discussed in detail in the light of available data on the neighbouring allied groups of Meghalaya, India.

INTRODUCTION

The Lyngam, a numerically small tribal population (approximately 5,000 souls), is mainly concentrated on the western part of the Khasi hills in Meghalaya. The meaning of the word Lyngam is not very clear. The Lyngam is the Khasi name, whereas the Garo name for them is Megum. Playfair (1909) has referred the Lyngam as Megum, whereas Gurdon (1907) calls them as Nuniya Garo. As mentioned by Playfair (1909) the Megum are known as Nuniya by the Assamese in the Kamrup district of Assam. They also call themselves as Nongtraï (Nongsiang, 1994).

Information on the origin of this population is shrouded in obscurity. Regarding their ethnic and linguistic affinity, there are lots of opposing views among the scholars. Some researchers are of the opinion that they are one of the five Khasi sub tribes (Grierson, 1928; Gurdon, 1914), but others believe that they are one of the sub-divisions of the Garo (Bhattacharjee, 1978; Sangma, 1981). Still some others have gone to the extent describing them as a hybrid group formed due to admixture between the Khasi and Garo (Playfair, 1909; Ehrenfels, 1953; Barch, 1967; Nongsiang, 1994), while a few consider that the Lyngam is ethnically different from both the Khasi and Garo (Karotemprel, 1985; Mathur, 1979). However, no one can deny that the present day Lyngam is being identified as one of the Khasi sub-groups (Karotemprel, 1985).

So far no bio-anthropological study has been carried out on the Lyngam. Considering dearth of data, in the present note an attempt has been made to investigate the genetic make-up of the Lyngam on the basis of a few genetic markers with a view to assessing the biological relationship between the Lyngam and their neighbouring assumed cognates - the Khasi and the Garo of Meghalaya.

MATERIAL AND METHODS

The materials for the present study were collected from 120 Lyngam (70 males and 50 females) from Nongdaju and Panch Kilo villages, situated in the west Khasi hills district, Meghalaya. In the present sample close relatives were not included as far as possible. The standard techniques (Lawler and Lawler, 1951; Harris and Kalmus, 1949; Ishihara, 1972) were followed.

RESULTS AND DISCUSSION

Table 1 shows that the Lyngam are characterised by higher frequency of A allele in comparison to that of B allele. The chi-square value (3.99, d.f. = 1) shows that the population conform to the Hardy Weinberg equilibrium. The value of $D/\sigma (\pm 0.03)$ also indicates that the population is in genetic equilibrium. Among the Lyngam only 1.67% out of 120 individuals are of Rh- type. It shows the frequency of allele (d) is 0.1292 among the Lyngam.

Following the bimodal distribution of threshold values (Harris and Kalmus, 1949), it is found that the frequencies of tasters and non-tasters among The Lyngam are 70.0% and 30.0%, respectively. So, frequency of non tasters and non-tasters gene is found to be 0.5477 (Table 2).

Table 1 : Percentage distribution of ABO blood groups

Population	No.	Phenotype				Allele			χ^2 with Lyngam (df=3)	Reference
		O	A	B	AB	A	B	O		
Lyngam	120	20.00	39.17	28.33	12.50	0.3193	0.2459	0.4348	-	Present Study
Khasi	200	33.00	35.00	18.50	13.50	0.2778	0.1726	0.5493	8.17*	Macfarlane, 1941
Khasi	315	31.40	36.80	24.10	7.60	0.2600	0.1790	0.5610	7.02	Miki et al., 1960
Khynriem Khasi	202	49.00	29.20	18.70	3.09	0.1773	0.1165	0.7050	32.36*	Das, 1969
Pnar Khasi	197	52.79	33.50	11.61	2.10	0.1974	0.0721	0.7303	45.66*	Das, 1969
Bhoi Khasi	192	38.69	30.43	23.04	7.84	0.2033	0.1684	0.6040	12.15*	Das, 1969
War Khasi	230	55.72	28.64	11.97	3.67	0.1774	0.0187	0.7377	47.21*	Das, 1969
Khasi	136	33.80	34.50	25.00	6.60	0.2340	0.1740	0.5910	7.43	Flatz et al., 1972
KHASI (Pooled)	1472	41.44	32.81	19.29	6.45	0.2210	0.1385	0.6459	25.63*	
Garos	142	26.76	22.53	40.85	9.85	0.1784	0.2950	0.5226	10.50*	Mazumdar, 1950
Garos	144	25.69	29.86	32.64	11.81	0.2364	0.2557	0.5078	2.98	Deka, 1978
GAROs (Pooled)	286	26.22	26.22	36.71	10.84				7.97*	

* indicates statistically significant at 5.0% level of probability

Table 2 : PTC taste sensitivity

Population	No.	Non-taster		χ^2 with Lyngam (df=1)	Reference
		%	Gene frequency		
Lyngam	120	30.00	0.5477	-	Present Study
Khasi	317	21.77	0.4666	3.22	Miki et al., 1960
Khynriem Khasi	222	11.26	0.3355	18.66*	Das, 1976
Pnar Khasi	170	17.06	0.4130	6.77*	Das, 1976
Bhoi Khasi	210	21.90	0.4679	2.67	Das, 1976
War Khasi	236	12.29	0.3506	16.71*	Das, 1976
Khynriem Khasi	300	10.33	0.3214	24.72*	Jaswal, 1981
KHASI (Pooled)	1455	15.74	0.3967	16.10*	
Garos	125	21.60	0.4647	2.26	Deka, 1978

* indicates statistically significant at 5.0% level of probability

In the present study 70 males, aged 14 to 55 years, have been examined for colour blindness with the help of Ishihara chart (1972). However, not a single individual has been detected as a partial or a complete colour blind among the Lyngam.

As stated earlier, the present day Lyngam claim to be identified as Khasi, while some incline to postulate that they have Garo affinity. It would, therefore, be of some interest to examine their affiliation with the Khasi *vis-a-vis* the Garo in respect of these genetic markers.

With regard to ABO blood groups, it is observed that the Lyngam significantly differ from each of the Khasi sub-populations as well as the Garo. However, exception is limited to the Khasi samples, reported by Miki et al. (1960) and Flatz et al., (1972) and also Garo

sample, examined by Deka (1978). It is a known fact that allele *d* is very rare among the Mongoloids. As mentioned earlier, it is found that 1.67% of the Lyngam are of Rh- blood groups. It may be recalled here that Rh- allele (or *d*) has not been reported from either among the Khasi (Miki et al., 1960; Bhattacharjee, 1975) or among the Garo (Deka, 1978) So, it shows that so far as the ABO and Rh blood group systems are concerned, the Lyngam is in no way resemble either Khasi or the Garo.

In respect of PTC taste sensitivity (Table 2) it is seen that the Lyngam differ significantly from all the Khasi subgroups, excepting the Bhoi Khasi. However, the Garo sample, reported by Deka (1978), does not show any statistical difference with the Lyngam.

It is already mentioned that no colour blind

individual is found among the Lyngam in the present study. But it may be noted that Mukherjee (1963; 3.80%) and Rizvi (1974; 7.35%) have reported high incidence of colour blindness among the Khasi as well as among the Garo (4.90%; Rizvi, 1974). So, it seems that the Lyngam certainly differ from both the Khasi and Garo in respect of this genetic trait.

On the basis of the present bio-anthropological evidence, it is clear that the Lyngam differ not only from most of the Khasi sub-populations but also from the Garo. Keeping in view the limitations of the present study we do not venture to arrive at any definite conclusion but tentatively suggest that the Lyngam seem to be a distinctly different population and with all probability not either a sub-population of the Khasi or of the Garo. However, it is felt that some detailed physical anthropological studies, taking into consideration as many genetic markers as possible, should be taken up among these populations in order to find out their phylogenetic relationships.

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