

Distribution of The ABO and LH Blood Types in The Kachchi of Sagar, Madhya Pradesh, India

Shyamal Koley

Department of Human Genetics, Guru Nanak Dev University, Amritsar 143 005, Punjab, India

KEY WORDS Scheduled Caste, LH Types, Polymorphism, Sagar.

ABSTRACT Data are presented on the ABO and LH blood types in Kachchi, a scheduled caste of Madhya Pradesh, India. The results indicate no significant differences in the distribution of both these blood markers when compared with the Brahmins of the same area.

INTRODUCTION

The LH-specificity refers to weak (LH-negative) or strong (LH-positive) agglutination of erythrocytes obtained with the lectin from *Erythrina lithosperma* (Shrivastava et al., 1979).

The Kachchi is an important cultivating scheduled caste of the northern districts. They are also known as Kushawaha or Bagwan in Madhya Pradesh. A number of subgroups of the community like Hardaha, Sahauva, Kushawaha etc. are found. Hindi is their mother tongue and Devnagari script is used. The subgroups of the community are usually endogamous. They are Hindu by religion and worship village deities like Bajrang and Kharmi. Their family deities are Kankali and Bhalera Devi.

Since population differences are known to exist regarding the distribution of the ABO and LH blood types (Shrivastava et al., 1979; Sehajpal and Shrivastava, 1980, 1981; Reddy et al., 1981, 1985; Kaur, 1983; Koley et al., 1991; 1992, 1993, 1994; Koley and Shrivastava, 1992a, 1992b, 1993, 1994), and information from this particular community in these aspects was lacking, so the present study was planned.

MATERIAL AND METHODS

A total of 268 blood samples was collected

randomly from unrelated normal healthy Kachchi individuals of Tilli and Patharia Jat villages of Sagar district, Madhya Pradesh, and were compared with the Brahmins (Koley and Shrivastava, 1992a) of the same areas. Since sex differences are not known to exist in the LH system, the samples collected from both males and females were pooled for all analyses.

For the ABO typing standard serological procedures were followed. The LH typing was done with anti-LH lectin prepared with the seeds of *Erythrina lithosperma* as described by Shrivastava et al. (1979).

RESULTS AND DISCUSSION

Table 1 exhibits the distribution of the ABO blood groups along with their allele frequencies in the Kachchi of Sagar. The Kachchi had the highest frequency of group B (39.92%), followed by group O (28.73%), group A (22.01%), and group AB (9.33%), and when compared with the Brahmins, no significant differences were found statistically in regard to the distribution of the ABO blood types. The allele frequencies had the order of O>B>A in both of them.

The phenotypic distribution of the LH types and allele frequencies in the Kachchi of Sagar and a comparison with the Brahmins are shown in table 2. Both show almost same frequencies of the LH types. In the Kachchi, the allele frequencies of LH⁺ and LH⁻ alleles were 0.8486 and 0.1514, respectively.

The distribution of the LH types with A, B and AB individuals in the Kachchi of Sagar and a comparison with the Brahmin are given in table 3. The Kachchi had the high-

Table 1 : Distribution of the ABO phenotypes and allele frequencies in the Kachchi of Sagar

Population	n		Phenotypes				Allele frequencies		
			O	A	B	AB	O	A	B
Kachchi	268	No. obs.	77	59	107	25	0.5397	0.1719	0.2884
		% obs.	28.73	22.01	39.92	9.33			
Brahmin L	137	No. obs.	41	34	54	8	0.5670	0.1694	0.2634
		% obs.	29.93	24.82	39.42	5.84			

$$\chi^2_{df} = 1.712$$

L. Koley and Shrivastava, 1992a

Table 2 : Distribution of the LH types and allele frequencies in the Kachchi of Sagar

Population	n	LH ⁺		LH ⁻		Allele frequencies	
		No.Obs.	%Obs.	No.Obs.	%Obs.	LH ⁺	LH ⁻
Kachchi	268	193	72.01	75	27.98	0.8486	0.1514
Brahmin	137	99	72.26	38	27.74	0.8501	0.1499

$$\chi^2_{df} = 0.003$$

L. Koley and Shrivastava, 1992a

Table 3: Distribution of the LH types in A, B and AB individuals in the Kachchi of Sagar

Combination	Kachchi		Brahmin L		χ^2_{df}
	No. Obs.	% Obs.	No. Obs.	%Obs.	
A/LH ⁺	29	49.15	18	52.94	0.124
A/LH ⁻	30	50.85	16	47.06	
B/LH ⁺	76	71.03	36	66.67	0.323
B/LH ⁻	31	28.97	18	33.33	
AB/LH ⁺	11	44.00	4	50.00	0.086
AB/LH ⁻	14	56.00	4	50.00	

L. Koley and Shrivastava, 1992a

er frequencies for A/LH⁻(50.85%), AB/LH⁻(56.00%) but had the lower frequency for B/LH⁻(28.97%) than the Brahmin. However, no statistically significant differences were found in any case.

It may be concluded that as for the distribution of the ABO and LH blood markers not much differentiation has occurred between the Kachchi and the Brahmin populations of central India, inspite of influence of a rigid caste system, religious obligations and mating restrictions.

REFERENCES

Kaur, K.: *The LH Red Blood Cell Membrane Specificity*

in Man and Selected Animals. Ph.D. Thesis, Punjab University, Patiala (1983).

Koley, S. and Shrivastava, P.K.: The distribution of the ABO and LH blood groups in some Central Indian populations. *J. Hum. Ecol.*, 3: 239-242 (1992a)

Koley, S. and Shrivastava, P.K.: Genetics of the LH specificity: further observations. *J. Indian Anthropol. Soc.*, 27: 97-101 (1992).

Koley, S. and Shrivastava, P.K.: Four important properties of the anti-LH lectin. *South Asian Anthropologist*, 14: 51-54 (1993).

Koley, S. and Shrivastava, P.K.: The anti-LH lectin-leucocyte reactions in patients with diabetes mellitus. *J. Hum. Ecol.*, 5: 147-148 (1994).

Koley, S., Jain, R. and Shrivastava, P.K.: The LH specificity in diabetes mellitus. *Proceedings of the U.G.C. National Seminar 'New Horizons in Human Biology'*, I.J.S. Bansal et al. (Eds.) Patiala. pp.183-187 (1991).

Koley, S., Jain, R. and Shrivastava, P.K.: Serum anti-

- body titres against LH-positive and LH-negative red blood cells., *South Asian Anthropologist*, **13** : 43-45 (1992).
- Koley, S., Saxena, Y.R. and Shrivastava, P.K.: The LH-specificity in patients with high diastolic blood pressure. *J. Hum. Ecol.*, **4** : 301-303 (1993).
- Koley, S., Jain, R. and Shrivastava, P. K. : The LH-specificity in diabetes mellitus : further observation. *J. Hum. Ecol.*, **5** : 201-204 (1994).
- Reddy, V.R., Naidu, G.P. and Shrivastava, P.K. : The LH red blood cell membrane specificity in three South Indian populations. *Acta Anthropogenet.*, **5** : 189-194 (1981).
- Reddy, V.R., Reddy, G.O. and Reddy, B.K.C. : A study on the inheritance of LH blood types in Tirupati families. *South Asian Anthropologist*, **6** : 145-147 (1985).
- Sehajpal, P.K. and Shrivastava, P.K. : Genetics of the LH red blood cell membrane specificity. *Acta Anthropogenet.*, **4** : 85-88 (1980).
- Sehajpal, P.K. and Shrivastava, P.K. : Distribution of LH types in some North Indian populations. *Acta Anthropogenet.*, **5** : 181-187 (1981).
- Shrivastava, P.K., Sehajpal, P.K. and Kaur, H. : The LH system: A new red blood cell membrane specificity in Man. *Acta Anthropogenet.*, **3** : 83-92 (1979).