

The Distribution of The ABO and LH Blood Types in Persons with Abnormal Erythrocyte Sedimentation Rate

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ABSTRACT A total of 345 blood samples were categorised as normal and abnormal on the basis of their erythrocyte sedimentation rate, E.S.R. level and typed both for the ABO and LH blood groups. The results suggest a lack of association between persons with abnormal E.S.R. and the LH reaction patterns.

INTRODUCTION

A new red blood cell membrane specificity in the seed extracts of *Erythrina lithosperma*, a legume plant, was reported by Shrivastava et al. (1979) and was called LH by them. The anti-LH lectin reacts with human red cells by either clumping them firmly or just weakly agglutinating them; the former type of reaction is called LH-positive and the latter LH-negative. Subsequent studies relating to the immunochemical properties of the anti-LH lectin and its genetics and distribution have been made by Shrivastava et al. (1979), Sehajpal and Shrivastava (1980, 1981), Reddy et al. (1981, 1985), Kaur (1983), Koley et al. (1991, 1992, 1993, 1994) and Koley and Shrivastava (1992 a, b, 1993, 1994).

Erythrocytes carry a negative charge and conditions which are responsible to increase the positive charge in plasma accelerate their sedimentation rate. Increased erythrocyte sedimentation rate (E.S.R.) indicates acute general infections rather than functional disorders. Sedimentation depends on three major factors—the differences in densities of

erythrocytes and plasma, the degree of adherence of erythrocytes to one another related to the plasma protein content, and the resistance that plasma exerts on the erythrocyte surfaces. The present paper is an attempt to enquire the ABO and LH profile of individuals with abnormal E.S.R.

MATERIALS AND METHODS

A total of 345 adult blood samples were obtained from the Varni Pathology Clinic, Sagar, Madhya Pradesh. The normal E.S.R. level in males was 0-6.5 mm/h and in females 0-15 mm/h. We categorised the samples as abnormal when their E.S.R. level was above the normal.

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

RESULTS AND DISCUSSION

The distribution of the LH types in adult males and females with normal and abnormal E.S.R. is shown in table 1. In normal males, the frequencies of the LH-positive and LH-negative types were observed 76.74% and 23.26%, respectively. In males with abnormal E.S.R., the frequencies were found to be 80.15% and 19.85%, respectively. In case of normal females, the frequencies of the LH-

Table 1: Distribution of the LH types among adult male and female individuals with normal and abnormal erythrocyte sedimentation rate (E.S.R.)

Types	Male		Female	
	Normal E.S.R.	Abnormal E.S.R.	Normal E.S.R.	Abnormal E.S.R.
LH ⁺ No. observed	33 (76.74)	109 (80.15)	53 (73.61)	70 (74.47)
LH ⁻ No. observed	10 (23.26)	27 (19.85)	19 (26.39)	24 (25.53)
	$\chi^2_{(1)} = 0.230$	$p > 0.05$	$\chi^2_{(1)} = 0.016$	$p > 0.05$

o individuals excluded

Table 2: ABO groupwise distribution of the LH types in pooled male and female individuals with normal and abnormal erythrocyte sedimentation rate (E.S.R.)

Sample	n	O		A		B		AB	
		LH ⁺	LH ⁻	LH ⁺	LH ⁻	LH ⁺	LH ⁻	LH ⁺	LH ⁻
Abnormal E.S.R.	230 No. observed	87	—	21	13	51	29	20	9
	% observed	37.83	—	9.13	5.65	22.17	12.61	8.70	3.91
Normal E.S.R.	115 No. observed	54	—	7	14	21	11	4	4
	% observed	46.96	—	6.09	12.17	18.26	9.56	3.48	3.48

Table 3: Distribution of the LH types in pooled (male and female) individuals with normal and abnormal erythrocyte sedimentation rate (E.S.R.)

Sample	n	LH ⁺		LH ⁻	
		No. observed	% observed	No. observed	% observed
Abnormal E.S.R.	230	179	77.83	51	22.17
Normal E.S.R.	115	86	74.78	29	25.22
$\chi^2_{(1)} = 2.532$		$p > 0.05$			

positive and LH-negative types were observed as 73.61% and 26.39%, respectively. In females with abnormal E.S.R., the frequencies were 74.47% and 25.53%, respectively. These differences were statistically non-significant in both sexes.

Since it seemed to us that the LH-specificity may be related to the ABO blood groups, we have typed our abnormal E.S.R. samples for both these systems and the results are presented in table 2. It was observed that all the normal as well as abnormal E.S.R. samples of blood group O were invariably LH-positive. Persons

with abnormal E.S.R. had lower frequency (37.83%) than normal (46.96%) for this blood group. In group A persons with abnormal E.S.R. had higher frequency (9.13%) with the LH-positive type than normal (6.09%). In group B, persons with abnormal E.S.R. had higher incidence of LH-positive (22.17%) than normals (18.26%). In group AB, persons with abnormal E.S.R. were more frequent (8.70%) for the LH-positive than persons with normal E.S.R. (3.48%).

In table 3 comparison of the distribution of the LH-types in pooled male and female samples with normal and abnormal E.S.R. is shown. In persons with abnormal E.S.R., the frequency of the LH-positive is higher (77.83%) than normals (74.78%) but this difference is not statistically significant.

Thus, it may be concluded that the anti-LH lectin (*Erythrina lithosperma*) reacts equally well with the red blood cells of persons with both normal and abnormal E.S.R. and that the strong clumping of red cells seen in the LH-positive type of reaction is not a function of E.S.R.

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