ABO blood groups, Rhesus negativity, and primary biliary cirrhosis

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SUMMARY The distribution of blood groups and Rhesus negativity in 91 British patients with primary biliary cirrhosis was compared with a sample of registered blood donors. There were no significant differences from the expected proportions calculated from the control groups. Although the number of cases studied is small the analysis does not confirm previous reports of an excess of A group in the disease. If a genetic basis exists for primary biliary cirrhosis alternative markers must be found.

Primary biliary cirrhosis is a disease of unknown aetiology. There are, however, some indications that the disease has a genetic basis (Boinet, 1898; Finlayson, 1900; Parkes Weber, 1903; Osler, 1905; Feizi, Nacarato, Sherlock, and Doniach, 1972; Walker, Bates, Doniach, Ball, and Sherlock, 1972; Chohan, 1973). In the search for a genetic marker, Berg (1973) recently reported that in a series of German patients with primary biliary cirrhosis there was an apparent excess of blood group A. In this communication we report the distribution of blood groups in a series of 91 patients with the disease.

Patients and Methods

The records of patients seen at the Royal Free Hospital with a diagnosis of primary biliary cirrhosis (confirmed by a positive mitochondrial antibody test and liver biopsy) were examined for blood group determination. Ninety-four cases were found, of which three were excluded from the study as being of foreign origin. This left a total of 91 of English, Scots, and Welsh (but not Irish) domicile.

The distribution of A, B, O, AB, and Rhesus negativity in this sample was compared with a series (Kopéc, 1970) of blood donors from various parts of the country which showed that the regional variation of blood groups is homogeneous within 39 distinct areas of the United Kingdom. An overall analysis could be performed for groups O, A, and B + AB combined as well as Rh negativity but cases of primary biliary cirrhosis occurred in sufficient numbers for a regional analysis in only four areas for groups A and O. Differences in the proportion of blood groups in disease and control series were

tested for significance (Woelf, 1955) and expressed in the usual way.

Results

OVERALL ANALYSIS

This was based on the complete Kopéc national series and the 91 cases of primary biliary cirrhosis. It confirms that the incidence of A, O, and B + AB is the same as in the general population of the UK (table I).

REGIONAL ANALYSIS

Sufficient cases fell into Kopéc's areas 15 (central England), 20 (Suffolk and Essex), 21 (Kent, parts of Surrey, and Hampshire), and 30 (north London) for these calculations. Again, the distribution of blood groups A and O in patients with primary biliary cirrhosis is the same as in the populations of these regions.

RHESUS NEGATIVITY

The regional analysis of the incidence of Rhesus negativity is complicated by local variation in laboratory procedure and notation as well as the tendency for donor self selection. In view of this no detailed analysis was performed and the assumption of a national frequency of 18% was made. The results in table II confirm that the expectation of Rh- is the same as in the general population.

Discussion

Previous blood group studies have reported the association of group A with both cryptogenic and alcoholic cirrhosis (Billington, 1956; Wewalka,

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Analysis	No. in Disease Series		Controls		Relative Incidence	χ^2
O v A	Group O 46	Group A 35	Group O 223 634	Group A 198 194	A : O 1:164	0.388
O v B + AB	Group O 46	Groups B + AB 10	Group O 223 634	Groups B + AB 56 534	B + AB : O 1:163	0.181
A v B + AB	Group A 35	Groups B + AB 10	Group A 198 194	Groups B + AB 56 534	B + AB : A 0.998	0.000
A v O + B + AB	Group A 35	Group O + B + AB 56	Group A 198 194	Group O + B + AB 280 168	O + B + AB : A 0.884	0.001

Table I Overall analysis of ABO blood groups in patients with primary biliary cirrhosis

Total Cases	Rh Negativity	
	Observed	Expected
91	19	16.4 $\chi^2_{(1)} = 0.410, P > 0.50$

Table II Rhesus negativity in patients with primary biliary cirrhosis

1960). Zuckerman (1966), however, analysing 347 cirrhotics seen at the Royal Free Hospital was unable to find such a predominance in a series which excluded primary biliary cirrhosis and active chronic hepatitis.

The comparison of this small number of patients with the controls may not be sufficiently accurate to bring out significant differences. For example, the approximate 95% fiducial limits for the fourth analysis of table I are 0.3-1.1. This indicates that the sample size (large as it is for primary biliary cirrhosis) is still rather too small for confident conclusions about the true blood group distribution. Nevertheless the evidence suggests that no association occurs between primary biliary cirrhosis, blood group, or Rhesus negativity. We are thus unable, in a somewhat larger series than Berg's 38 cases, to confirm an excess of A group.

The occurrence of primary biliary cirrhosis in families, its well known ethnic variation in incidence, and failure to find important occupational or environmental predisposing factors (Hamlyn and Sherlock, 1974) suggest a genetic basis for suscepti-

bility to this disease. If a genetic marker could be found it might play a part in presymptomatic diagnosis and more meaningful family studies. The present study has shown that blood group is invalid as a genetic marker and other markers such as HL-A histocompatibility may be more useful.

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