

Observation on the Frequency of A.B.O. and Rh Blood Groups in Leprosy and Non-Leprosy People in Ghana

J. A. K. YANKAH, A.I.M.L.T.

Senior Laboratory Superintendent, Ankaful Leprosarium – Ministry of Health, Ghana

The epidemiology of leprosy clearly shows, that exposure to the infection is not the sole factor in the spread of the disease; since the number of individuals exposed who do not develop the disease is so great that the significance of this observation cannot be ignored.

As early as the middle of the last century, leprologists believed that leprosy might have a hereditary basis. This theory derived its support from the writings of Danielsson and Boeck (1848). These investigators regarded family group-incidence of leprosy shown on records, not as a result of intrafamily infection, but as a result of a hereditary disease, transmitted from one human being to another.

Virchow, Bobes *et al.* were also strong advocates of this view and it remained valid until it was pushed to the background by the convincing evidence of *Mycobacterium leprae* being essentially the cause of disease.

In recent years many factors have been mentioned as being possible agencies, in addition to mere contact with *Mycobacterium leprae*, responsible for the development of leprosy in man. One such factor is blood group antigens on which many workers have carried out a series of observations on the frequency of A.B.O. blood groups in leprosy but with conflicting results.

Recently there have been isolated references to the relationship between A.B.O. blood groups and leprosy. (Sazue, Kawarura *et al.*)

Hsuen, J. and others (1963) observed that the incidence of leprosy is high among Group O

and low in Group B, but omit to make clear if the local blood group distribution of the population was taken into consideration and compared with the frequency among leprosy patients.

On the other hand Sato, S. and others recorded no specific relation between A.B.O. and S. blood groups in leprosy (1949).

These two independent observations prompted us to make our own study of blood group distribution among leprosy patients in Ghana but before attempting to give the comparison, an effort was made to get the blood group distribution in Ghana so as to compare it with our results among leprosy patients.

Blood group distribution has been studied only among Ewes and Ashantis of Ghana, the then Gold Coast, by Armattoo 1953.

This we thought might not represent the blood group distribution in the whole country since these two tribes form less than half the total population of Ghana.

To move nearer to getting a fair sample of all the tribes of Ghana, 400 blood donors made up of various tribes were selected to give the frequency of the human blood groups in Ghana. It is interesting to note that the percentage of distribution was actually the same as Armattoo's observation recorded among the Ewes and Ashantis only.

The population of Ankaful Leprosarium is made up of a cross section of entire population of Ghana with every tribe represented; Lepromatous and Tuberculoid patients were grouped for A.B.O. and Rh.

TABLE I

Table I shows the comparison between leprosy population and the general population by blood groups and Rh distribution

Blood Group	A	B	O	AB	Rh+	Rh-ve	Total	Remarks
Leprosy Patients	87	99	196	18	373	27	400	The A.B.O. frequency confirms the observations of Armattoe, 1953.
Blood Donors	83	100	204	13	375	25	400	„

TABLE II

Table II shows Blood group distribution of the percentage of Leprosy and General population.

Blood Group	A	B	O	AB	Rh+	Rh-ve	Remarks
	%	%	%	%	%	%	
Leprosy Patients	21.75	24.75	49	4.5	93.25	6.75	The Rh frequency % confirms the observation made by Mourant 1953
Blood Donors	20.75	25	51	3.25	93.75	6.25	„

TABLE III

Table III shows Comparison of frequency of blood groups between Lepromatous and Tuberculoid Leprosy patients.

Blood Group	A	B	O	AB	Rh+	Rh-ve	Total
Lepromatous	54	58	75	9	183	13	196
Tuberculoid	33	41	121	9	190	14	204

Of the Group O patients in Table III, 75 of them are lepromatous and 121 are tuberculoid.

This difference might be an interesting significance which needs further study, and might explain the findings of Hsuen and others.

It appears from this result that Group O patients might have more natural resistance to leprosy than the other blood groups; a pressing need therefore is for further tests.

CONCLUSION

Our findings confirm Sato's observation that there is no specific relation between A.B.O. and Rh blood group antigens.

That the proportion of lepromatous and tuberculoid type of leprosy among Group O patients may be significant in the immunological aspect of the disease.

SUMMARY

The view is discussed of some leprosy workers with regard to hereditary factors in leprosy and the theory that contact alone is insufficient explanation for the manner of spread of leprosy.

(2) Blood groups and Rh factors are compared between a cross section of the community with leprosy and the normal population.

No significant differences appear, thus confirming the findings of Sato *et al.*

Tuberculoid leprosy was found to be significantly higher among Group O leprosy patients and this difference needs further investigations.

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