A PRELIMINARY SURVEY OF ABO BLOOD GROUP FREQUENCY IN NASOPHARYNGEAL CARCINOMA IN CHINESE PATIENTS

By L. J. Seow, M.B.,B.S. F.R.C.S.E.,
S. B. Kwa, M.B., M.R.C.P.E., M.R.C.P. (GLAS.),
and
C. K. Teoh, M.B.,B.S.

Since the turn of this century a number of investigations in the association of ABO blood groups and diseases with a diversity of findings have been reported from all over the world. One of the important contributors was I. AIRD, who with his associates published in 1953 their studies of the relationship between cancer of the stomach and ABO blood groups. They found that there was an excess of group A with a deficiency of group O in their test series. This was later confirmed by other workers, such as Koster et al in 1955, Buckwater et al and Walther et al in 1956. G. S. Yeoh in his review of gastric cancer 1960 showed an apparent rise in group A though the number in his series may not be enough to be of statistical significance. However, Jennings et al pointed out that in their series the increase of group A was confined to the carcinoma of the pyloric end of the stomach and there was no apparent increase in the carcinoma of the fundus of the stomach. Similar studies were carried out on peptic ulceration (Aird et al) 1954. He reported that there was a significant rise in group O and in fact stated that group O people are about 35% more susceptable to peptic ulceration which require treatment than those of the other blood groups. It was further substantiated by Brown et al 1956. But Clarke et al found that the increase in group O was confined to duodenal ulcer only and there were no changes in gastric ulcer. Among the surveys of blood group in relation to other neoplasms there was an excess of group A in lung cancer of the oat-cell type (McConnel et al). Similarly there was an increase of group A in tumours of the salivary tissue (Cameron).

Among the most common malignant tumours in Singapore, nasopharyngeal carcinoma is reported to be the second most common according to biopsy figures from 1950-1961. This disease seems to have a strong racial preference. Chinese occupies 95% of these cases. In the 1957 Census Singapore has a Chinese population of 79.77% and it would be expected that this disease is common here. This preliminary survey is to study if there is any relationship between the ABO blood group and this disease, as there is no report on such a study yet.

COLLECTION OF DATA

Each year we see about 150 cases of nasopharyngeal carcinoma. Unfortunately blood grouping of each case was not seriously contemplated until 1960. From 1960 to date we have collected 245 proved cases of this disease. In such a study the criteria for diagnosis of each case is very important. A knowledge of the clinical feature of this disease will help to recognise it. For a proliferative or ulcerative growth it can be seen quite obviously with a post-nasal mirror and biopsy can be obtained via the anterior nares. For an infiltrative growth where there are no physical signs of growth a transpalatal strip biopsy could be performed on the sites where such growth commonly arises e.g. the eustachian cushion, fossa of Rosenmuller and the roof of the nasopharynx. The criteria for diagnosis in our cases is a positive histological finding of carcinoma in a biopsy from the primary site in the Nasopharynx. The histological picture is either of the squamous cell carcinoma or of the undifferentiated anaplastic type. The term lymphoepithelioma has been discarded because the lymphocytes present in the histological picture are believed to be incidental (T. B. Teoh) 1957.

Venous blood is collected from every case of nasopharyngeal carcinoma and sent directly to the Singapore Blood Transfusion Service for ABO grouping. The patient's cells are tested against anti-A and anti-B sera and then cross

Table I. ABO blood group distribution in the Control Series.

	O	A	B	AB
Absolute No.	6664	3967	3814	837
Percentage	43.53%	25.99%	24.99%	5.48%

Table II. ABO blood group distribution in the Test Series.

	O	A	B	AB
Absolute No.	92	63	63	14
Percentage.	39.65%	27.15%	27.15%	6.03%

Table III. A comparison of Test Series with Control Series.

	O	A	B	AB
Test Series.	39.65%	27.15%	27.15%	6.03%
Control Series.	43.53%	25.99%	24.99%	5.48%
Increase or decrease on the Control.	−8.91%	+4.46%	+8.64%	+10.03%

$X^2 = 1.53$ with three degree of freedom.

checked by testing the serum against known A-cells and B-cells. The negative results are checked and confirmed under a microscope.

For each case the following data are noted: - Patient's name, Hospital registration number, sex, age, occupation, race, place of residence, biopsy result, and ABO blood group.

SELECTION OF CONTROL

The selection of control can be done in one of the two ways, one is to select the control series from the general population of the area concerned, which is usually derived from the Blood Tranfusion Service. This method has the advantage of having a larger series and therefore less errors. The other way is to collect patients suffering from other diseases at the hospital concerned.

The ABO blood group frequency among the four ethnic groups, Chinese, Malay, Indian and Eurasian, in Singapore has been established in 1962. (K. T. Chan). There are variations among the four ethnic groups. As most of the nasopharyngeal carcinoma are Chinese we adopt his series of 15,262 Chinese whose ABO blood group distribution is shown in Table I as our control series.

RESULTS AND COMMENTS

As in all personal series it is inevitably a small one. In this series we have 245 proven cases of nasopharyngeal carcinoma of which 13 cases are of non-Chinese. The percentage of Chinese cases to non-Chinese is 94.69% to 5.31% In view of the small percentage of non-Chinese cases and an absolute Chinese control series we propose to drop the non-Chinese cases in the determination of ABO blood group frequency in our test series. Table I shows the ABO blood group distribution of the Control series and Table II shows that of the Test series. Table III is a comparison of both series.

The ABO blood group distribution of our Test Series is closely similar to that of the Control Series. The differences are so small that they are of no statistical significance when the Chi-Square Test of significance is employed. However, in such a study caution must be exercised in associating a particular blood group with a certain disease especially if the series studied is a small one. Mayr et al 1956 found that there was an excess of group O in pituitary adenomata whereas Aird et al 1960 with a larger series could not find any significance in any particular blood group.

In the past decade people of group A have been shown by various workers to be more susceptible to cancer of various parts of the body, such as Cancer of the stomach (Aird et al 1954), Cancer of the pancreas and oesophagus (Aird et al 1960), and Cancer of the prostate (Bourke 1962). I. Aird postulated that there might be an inherited element of

susceptibility or immunity to certain disease. Such inherited element varies in races and environment. Nasopharyngeal carcinoma is preponderant in the Southern Chinese whether they are living in their home land or migrated to other parts of the world, such as Hongkong. Singapore, and New York (K. H. Digby 1951). Such racial preference suggests that there might be an inherited susceptibility in the Southern Chinese to nasopharyngeal carcinoma. Perhaps with a larger series later we may be able to narrow down this element of inherited susceptibility to a particular blood group.

SUMMARY

A preliminary report of ABO distribution in 232 cases of nasopharyngeal carcinoma of Chinese origin. No significant differences could be detected when compared to the control series. Hence no conclusion could be drawn regarding the relationship of ABO blood group and this disease.

ACKNOWLEDGEMENT

We wish to express our gratitude and thanks to the staff of the Singapore Blood Transfusion Service and Dr. M. G. T. Mendoza Barker for their co-operation and help; the doctors and staff of the E. N. T. Dept., General Hospital, for helping to collect the cases; Mr. I. Nadarajah of the Medical Records Office for his help in the statistics; Dr. S. N. Kapur, Head of the E.N.T. Dept., for his kind permission to publish this paper.

REFERENCES

1. Aird I., Bental H. H., and Fraser Robert J. A. (1953). A Relationship between Cancer of Stomach and ABO Blood Groups. B.M.J. 1:799.
2. Aird I., Bentall H. H., Mehigan J. A., and Fraser Robert J. A. (1954). The Blood Group in relation to Peptic Ulceration, and Carcinoma of Colon, Rectum, Breast and Bronchus. B.M.J. 2:315.
3. Aird I., Lee D. R., and Fraser Robert J. A. (1960). ABO Blood Groups and Cancer of oesophagus, Cancer of pancreas, and pituitary adenomata. B.M.J. 1:1163.
4. Bourke J. B., and Griffin J. P. (1962). Blood Groups in benign and malignant prostatic hypertrophy. Lancet. 2:1279.
5. Brown D. A. P., Melrose A. G. and Wallace J. (1956). The Blood Group in Peptic Ulceration. B.M.J. 1:135.
6. Buckwalter J. A., Wohlwend E. B., Colter D. C., Tidrick R. T. and Knowler L. A. (1956). Peptic Ulceration and ABO Blood Groups. J.A.M.A. 162:1215.
7. Cameron J. M. (1958). Blood Groups in Tumours of Salivary Tissue. Lancet. 1:239.
8. Chan K. T. (1962). The ABO Blood Group frequency Distribution of Singapore based on a blood donor sample. Singapore Med. J. 3:3.
9. Clarke C. A., Cowan W. K., Edwards J. W., Howell-Evans H. W., McConnell R. B., Woodraw J. C. and Sheppard P. M. (1955). The Relationship of ABO Blood Groups to Duodenal Gastric Ulceration. B.M.J. 2:643.
10. Digby K. H. (1951). Ann. R. Coll. Surg. 9:253.
11. Jennings D., Balme R. H. and Richardson J. E. (1956). Carcinoma of stomach in relation to ABO Blood Groups. Lancet. 2:11.
12. Koster K. H., Sindrup E., and Seele V. (1955). ABO Blood Groups and Gastric Acidity. Lancet. 2:52.
13. McConnell R. B., Clarke, C. A., and Downton, F. (1954). Blood Groups in Carcinoma of the Lung. B.M.J. 2:323.
14. Mayr E., Diamond L. K. Levine, R. P., and Mayr M. (1956). Science. 124:932.
15. Teoh T. B. (1957). Epidermoid Carcinoma of the nasophrarynx among Chinese. A study of 31 necropsies. J. Path. & Bact. 73:451-465.
16. Walther W. W., Raeburn C. and Case J. (1956). Blood Groups in Relation to Malignant Disease. Lancet. 2:970.
17. Yeoh G. S. (1960). Carcinoma of the stomach. Singapore Med. J. Vol. 1:140.