

RELATIONSHIP OF ABO-Rh BLOOD GROUPS WITH CARCINOMA CERVIX

by

MALTI AMLANI,* D.G.O., M.D. (Obst. & Gynec.)

NEHRU BHOJWANI,** M.D., (Path. & Microbiol.)

and

ABHAY K. BHARGAVA,*** M.B.,B.S.

Pelvic organs are the commonest site of cancer in the female. Genital cancer accounts for 20 per cent of the total malignancies in female. Out of these, cancer cervix is the commonest, constituting 50 per cent of the female genital cancer. Then comes the carcinoma of body of uterus (about 30 per cent) followed by ovary (13 per cent), vulva, vagina and fallopian tubes (7 per cent). Kroffors and Kinnunen (1954) drew attention to the relationship of cancer of female genital tract with ABO blood groups. This relationship was based on the hypothesis that one type of secretor antigen may protect against certain types of diseases while the lack of the secretor antigen may be responsible for other types of diseases (Roberts, 1956).

Present study was designed to find out the relationship between carcinoma cervix and ABO blood groups and Rhesus blood groups.

Material and Methods

Present study was based on observations of blood groups in 10,000 normal

*Consultant Gynaecologist and Obstetrician, Jaipur.

**Senior Demonstrator in Pathology, S.M.S. Medical College, Jaipur.

***Registrar in Pathology, S.M.S. Medical College, Jaipur.

Accepted for publication on 1-4-80.

persons and in 200 cases of histopathologically confirmed cervical carcinoma.

Blood groups of 10,000 normal persons were obtained from the donor register of voluntary blood bank organization of S.M.S. Medical College and Hospital, Jaipur from 1975-79.

Blood from every patient was collected aseptically by finger prick. Blood group was determined by the method using high titre antisera. Rh factor was determined by saline and albumin methods.

ABO and Rh blood group distribution of normal healthy control population was compared with that of the cervical cancer patients. A statistical formula known Chi-Square (χ^2) test was applied to find out significance of the difference between the two groups.

Observations

Table I reveals that the incidence of blood group 'B' is 36.6 per cent in the control population, while it is 45.0 per cent in the patients of cervical cancer. The incidence in the cases of cervical cancer was thus found higher than the control population. However, to find out whether this higher incidence was statistically significant or not chi-square (χ^2) test was applied, which revealed that $\chi^2 = 20.01$ and p value was less than 0.01, at a degree of freedom 4. The value of p shows that

O	58	29.0	3,410	34.1	in the general population (incidence
---	----	------	-------	------	--------------------------------------

the higher incidence of blood group 'B' in cancer series is highly significant. No statistically significant relationship could be established between carcinoma cervix and other blood groups including Rh blood groups.

Discussion

In 1962 Mitra and Mondal compared blood groups of 521 Bengali women suffering from carcinoma of cervix with a control group of 2273 Bengali pregnant women. In the cancer group maximum number of patients were belonging to blood group 'B'. Our findings are compatible with the findings of these authors.

Tyagi *et al* (1965) reported a high frequency of blood group B and AB in carcinoma cervix patients as compared to the control population. There was no relationship between carcinoma of cervix and Rhesus blood group system in their studies.

Some workers from Europe reported a higher association of carcinoma cervix with the females belonging to blood group 'A' (Segi *et al*, 1957; Beolchini *et al*, 1957; Buckwalter, 1964; and Mogelnicki and Tarlowska, 1964). A similar finding was

group could have been just incidental. But in the present study, it appeared to be far from just a finding of chance as the cases of carcinoma of cervix were much more out of proportion in blood group 'B' than its incidence in the control population, and this finding was also statistically significant.

This association of higher frequency of carcinoma of cervix in persons with blood group B, might be helpful in suggesting a genetic factor—responsible for carcinoma cervix in individuals having this malignancy.

Conclusion

The present study was carried out at SMS Medical College and Hospital, Jaipur during the period January-December 1979. Blood group distribution of 10,000 normal healthy donors was taken as control and it was compared with the blood group distribution of 200 cases of carcinoma of cervix. Chi-square (χ^2) test was applied for the comparison between the two series.

A significant relationship was found between carcinoma cervix and blood group 'B'. No relationship was noted between carcinoma of cervix and other blood groups including Rh blood group.

TABLE I
Distribution of 'ABO-Rh' Blood Groups in
Carcinoma of Cervix and in Control Population

Blood Groups	Carcinoma of cervix		Control Population	
	No.	Percent	No.	Percent
A	38	19.0	2,050	20.5
B	90	45.0	3,660	36.6
O	58	29.0	3,410	34.1
AB	14	7.0	880	8.8
Rh -ve	9	4.5	599	5.0
Total	200		500	

$x^2 = 20.01$ $p < 0.01$ d.f. = 4

the higher incidence of blood group 'B' in cancer series is highly significant.

No statistically significant relationship could be established between carcinoma cervix and other blood groups including Rh blood groups.

Discussion

In 1962 Mitra and Mondal compared blood groups of 521 Bengali women suffering from carcinoma of cervix with a control group of 2273 Bengali pregnant women. In the cancer group maximum number of patients were belonging to blood group 'B'. Our findings are compatible with the findings of these authors.

Tyagi *et al* (1965) reported a high frequency of blood group B and AB in carcinoma cervix patients as compared to the control population. There was no relationship between carcinoma of cervix and Rhesus blood group system in their studies.

Some workers from Europe reported a higher association of carcinoma cervix with the females belonging to blood group 'A' (Segi *et al*, 1957; Beolchini *et al*, 1957; Buckwalter, 1964; and Mogelnicki and Tarlowska, 1964). A similar finding was

also reported by Helmbold from Germany, in 1961, after the study of ABO blood groups of eleven series of cases studied in different German cities.

The findings of Indian workers when compared to those of the European workers, pointed out to the fact that in Europe blood group 'A' was much more common in the general population (incidence 32.30 per cent), whereas in India, blood group B was much more common in the general population (incidence 36.60 per cent). Hence the association of carcinoma of cervix with these preponderant blood groups could have been just incidental. But in the present study, it appeared to be far from just a finding of chance as the cases of carcinoma of cervix were much more out of proportion in blood group 'B' than its incidence in the control population, and this finding was also statistically significant.

This association of higher frequency of carcinoma of cervix in persons with blood group B, might be helpful in suggesting a genetic factor—responsible for carcinoma cervix in individuals having this malignancy.

Conclusion

The present study was carried out at SMS Medical College and Hospital, Jaipur during the period January-December 1979. Blood group distribution of 10,000 normal healthy donors was taken as control and it was compared with the blood group distribution of 200 cases of carcinoma of cervix. Chi-square (x^2) test was applied for the comparison between the two series.

A significant relationship was found between carcinoma cervix and blood group 'B'. No relationship was noted between carcinoma of cervix and other blood groups including Rh blood group.

References

1. Beolchini, P. E., Cresseri, A. and De Maria, D.: *Rapporti tra neoplasie del collo dell'utero e gruppi sanguigni del sistema ABO (dati preliminari)* Genetics della tuberculosi e die tumori: Simposio Internazionale, Torino, 1957.
2. Buckwalter, J. A., Pollock, C. B., Haselton, G., Krohn, J. A., Nance, M. J., Ferguson, J. L., Bondi, R. L., Jacobsen, J. J. and Lubin, A. H.: *J. Iowa Med. Soc.* 54: 58, 1964.
3. Helmbold, W.: *Acta Genet.* 11: 29, 1961.
4. Krofors, E. and Kinnunnen, O.: *Brit. Med. J.* 1: 1305, 1954.
5. Mitra, S., Mondal, S. and Basu, A.: *Cancer* 15: 39, 1962.
6. Mogielnicki, W. and Tarlowska, L.: *ABO blood group distribution in patients with cancer of the uterus (In Polish)*. *Nowotwory.* 14: 335, 1964.
7. Roberts, J. A. F.: *Brit. J. Prev. and Soc. Med.* 11: 107, 1957.
8. Segi, M., Fukushtma, I., Fujisaku, S., Kurihara, M., Saito, S., Asano, K. and Kamoi, M.: *An Epidemiological study on cancer in Japan. The report of the Committee for Epidemiological study in cancer, sponsored by the Ministry of Welfare and Public Health.* *Gann.* 48 (Suppl.): 48, 1957.
9. Tyagi, S. P., Pradhan, S. and Agarwal, S. S.: *J. Indian Med. Assoc.* 45: 645, 1965.