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STUDY OF PREVALENCE OF ABO BLOOD GROUP IN PATIENTS OF CARCINOMA BREAST

Physiology

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ABSTRACT

Introduction: Certain blood group is an important risk factor for some malignancies like pancreatic, kidney, urinary bladder, cervix and stomach. Carcinoma of breast is the most common malignancy among urban Indian females and second commonest in rural India and the incidence is continuously increasing.

Aim: to study prevalence of ABO blood group in patients of carcinoma of breast.

Method and Material: This is a cross sectional, hospital based study, conducted in Gujarat Cancer Research Institute, Ahmedabad, Gujarat. 303 women who were diagnosed as carcinoma of breast included in this study from the GCRI hospital, Ahmedabad. Reports of Biopsy and blood group investigation were collected.

Result: Out of 303 women of carcinoma breast, patients having blood group A was 125, B was 110, AB was 16 and O was 52.therefore Breast malignancy in patients having blood group A (41.25%) is higher as compared to B (36.30 %), AB (5.28%) and O (17.16%).Thus the risk of developing breast malignancy in the blood group A is more than blood group B, O and AB.

Conclusion: The most vulnerable blood group regarding breast malignancy is found to be blood group A as compared to B, AB and O.

KEYWORDS

Blood group, carcinoma of breast

INTRODUCTION

Breast cancer is the second most common cancer among females in rural areas of our country. It constitutes around 20-25% of all female cancers in India.breast malignancies constituting about 25.2% of malignancies in women in all over world. In India, the incidence of breast cancer is about 1, 44,937 with incidence of about 27% of all female malignancies. The lifetime risk of developing breast cancer in Indian women is 1 in 28. The high risk age group of breast cancer in India is 40-70 years.

Breast cancer is a malignant disease and its number is increasing every year. There is a large amount of evidence that the ABO blood group system may play a role in disease aetiology also. Initially the association was found between stomach cancer and blood group A. It was also proved in pancreatic cancer. It leads the way to many researches and production of many reports showing association between blood group system and susceptibility to cancer. This can be due to the influence of blood group antigen over systemic inflammatory response.

Established risk factors include a family history of breast cancer, age of menarche, age of first birth, duration of lactation, parity, age of menopause, total life time ovulations, diet and hormonal levels. The ABO antigen expressed on the surface of malignant cells appears to be different from the antigen expressed on normal tissue. The different expression of antigens on the surface of cancer cells might alter motility, apoptosis and immune escape. These mechanisms might influence the initiation and spread of malignancies. It seems that blood types can influence breast cancer incidence and prognosis. The evidence of an association between blood type and breast cancer is inconsistent.

Human malignancies such as colon, breast and prostate cancer as the blood group carbohydrates expressed on cell surface of metastasis cancer cells function as cell adhesion molecules. The loss or presence of blood group antigens can increase cellular motility or facilitate the interaction between tumour cells and endothelial cells[1]. Studies of patients with a family history have reported that there is a higher prevalence in blood groups A and B for familial breast cancer than for sporadic breast cancer. On light of the above points, we carried out a meta-analysis to investigate whether the ABO blood group was risk factor for breast cancer.

METHOD AND MATERIAL

This is a cross sectional, hospital based study, conducted in Gujarat Cancer Research Institute, Ahmedabad, Gujarat. 303 women who were diagnosed as carcinoma of breast included in this study from the GCRI hospital, Ahmedabad.

A total no. of 303 confirmed diagnosed breast cancer patients were enrolled in this study, from 1st June 2017 to 20th Aug 2017. Reports of Biopsy and blood group investigation were collected. The data of age, sex, ABO blood group and pathological status of cancer were collected from the pathology department of GCRI hospital.

Pathologically confirmed diagnosis of breast cancer, Laboratory data available for ABO blood type and detailed record of disease, course and history. Blood samples were obtained into vacuum glass tubes containing EDTA.

ABO blood typing was carried out with standard agglutination method. ABO blood groups were determined by using antiserum A and Antiserum B. Blood group sampling of all cases was performed in the mentioned hospitals.

Standard Agglutination Method:

Red cell suspension is prepared by adding a drop of blood to 2ml of saline solution in a test tube. Then a drop of each antiserum A, antiserum B, anti-D serum is placed on one side of 3 different slides. The slides were labelled. A drop of isotonic saline solution is kept on the other side of all the 3 slides. It serves as a control. Add a drop each of red cell suspension on anti-A, anti-B, anti-D and the saline solution. Mix it gently using different tips of the stick. The slide is labelled accordingly. After 10 minutes, examined for the presence of agglutination and confirmed it under the microscope.

Inclusion criteria:

- Pathologically confirmed cases of female breast cancer
- Available laboratory data for ABO blood group type
- Record of detailed case history.

Exclusion criteria:

- Female who have benign breast lesions. e.g.fibroadenoma, lipoma, hemangioma, cyst…..

RESULT

Table 1: Incidence Of Blood Groups Of Carcinoma Breast

BLOOD GROUP	A	B	O	AB
Total no(303) of patients ca. breast	125	110	52	16
PERCENTAGE (%)	41.25%	36.30%	17.16%	5.28%

- Out of 303 women of carcinoma breast, patients having blood group A was 125, B was 110, AB was 16 and O was 52.
- Frequency of Breast malignancy in patients having blood group A

(41.25%) is higher as compared to B (36.30 %), AB (5.28%) and O (17.16%).

- Thus the risk of developing breast malignancy is in the blood group A more than blood group B, O and AB.

Chart 1: Incidence Of Blood Groups Of Carcinoma Breast

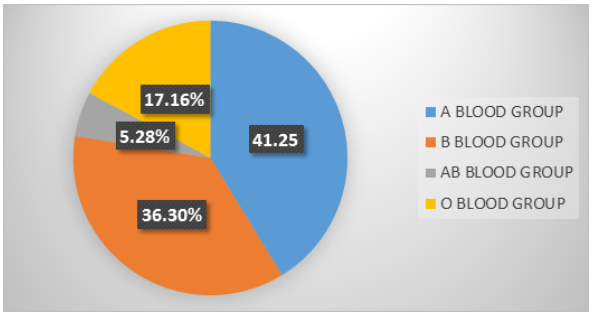
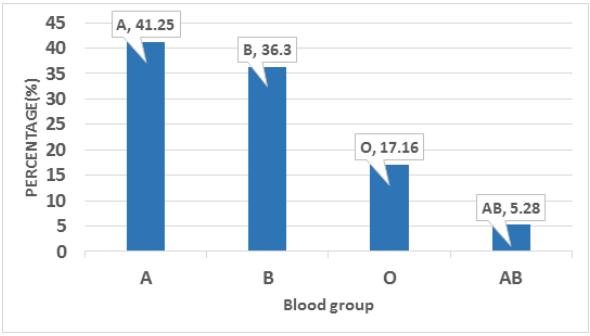


Chart 2: Incidence Of Blood Groups Of Carcinoma Breast



DISCUSSION

In this study, Frequency of Breast malignancy in patients having blood group A (41.25%) is higher as compared to B (36.30 %), AB (5.28%) and O (17.16%).Thus the risk of developing breast malignancy is in the blood group A more than blood group B, O and AB.

ABO blood group was highly correlated with breast cancer and the majority of patient with A blood group followed by O blood group in AL-Nassyiria governorate – Iraq[11].

Akhtar et al., conducted a research survey on the "ABO" blood group and incidence of different malignancies in India. The age, gender, "ABO" blood types of all the patients were recorded. The occurrence of "blood group A" was significantly higher (42.4%) in breast cancer patients[2].

Stamata kosetal, studied the association between breast cancer and ABO blood groups in 166 Greek women. They found that the ductal nature of breast cancer was 49.6% in blood group "A" and was least common in patients with blood group AB 3.6%.

Saxena S, Chawla VK, Gupta KK, Gaur KL. Association of ABO blood group and breast cancer in Jodhpur. In reference of proportion of breast cancer in blood group AB [OR 1 with 95% CI 0.476 to 2.103), the breast carcinoma in blood group A [OR 7.444 with 95% CI 4.098 to 13.5222) was found at 7.4 times at higher risk than in blood group 'AB'. Breast cancer was found minimum in blood group 'AB' and maximum in blood group 'A'[4].

Gates et al. (2012) piloted a study on blood types and their association with breast cancer incidence among 67697 women. The authors did not find any linkage between the "ABO" blood genotype and risk of breast cancer.

Payandeh et al., evaluated the frequency of "ABO" blood groups and breast cancer incidence. The frequency of "A+" was 40.8%; "O+" 28.9%; "B+" 14.5% and "AB+" was 9.2%. The most likely mechanism in the progress of an association among "ABO" and "Rhesus" blood types and incidence of breast cancer has not been established yet. The current genome-wide association studies suggest that the "ABO" blood type antigen increases the incidence of breast cancer. The genetic factors are most probably involved in the etiology of breast cancer[5].

A study performed by Guleria[6] showed that group A was significantly associated with breast cancer when compared to control. In Iceland a study in 1988 looked at the risk of bilateral breast cancer in 184 familial and 572 sporadic cases with regard to ABO typing.

A study of rapidly progressive breast cancer in Tunisian women found a slightly increased risk of a positive diagnosis in blood type A was reported by Mourali[7]

The increased rate of blood type A as compared to controls has been reported in breast cancer patients by Anderson and Has.

There are also some contradictory reports available about the association of blood group with breast cancer. Jayant K[8] reported no relation among breast cancer to blood groups whereas Surekha et al[9] have reported a high incidence exist between breast cancer and blood group B individuals.

CONCLUSION

This study concludes that there is strong association between ABO blood group system and breast malignancy. It is one of the risk factors newly identified for breast cancer which needs reasonable consideration. Women with blood group A had significant association with breast cancer. Thus the risk of developing breast malignancy is in the blood group A more than blood group B, O and AB.

Women with blood group A should increase the frequency of mammography screening for early diagnosis of breast cancer as they are more prone when compared with other blood groups. In future, this study has to be conducted in large series to elucidate the relationship between this disease and blood group.

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