

Relationship Between ABO blood Group and Carcinoma of Cervix in South Gujarat Women

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ABSTRACT

Introduction: Cervical cancer is one of the leading causes of death from cancer and second most common cancer, next only to breast cancer among women worldwide and is the most common female cancer in developing countries as well. In India, cervical cancer is the most common women related cancer, followed by breast cancer. Several studies have suggested an association between blood type A and cervical dysplasia/cancer. The aim of this study was to document the relationship between cervical cancer and ABO blood group in South Gujarat population.

Materials and Method: The present study was an observational descriptive study and was conducted retrospectively among 147 cases of cervical cancer patient admitted in tertiary care hospital, Surat and diagnosed by histopathologically over period of two and half years. Patients personal details were retrieved from Department of pathology and ABO blood group were retrieved from Department of Immunohaematology and blood transfusion. All details were entered in Microsoft excel and analyzed by descriptive statistics.

Results: Among 147 cases, maximum cases were found in age group of 30-44 years and showed preponderance of blood group A (31.97%) followed by group B (29.93%), O (27.21%), AB (10.88%).

Conclusion: The frequency of types A, B, AB and O in cervical cancer was different to the general healthy population in South Gujarat region.

Keywords: Cervical Cancer; South Gujarat; ABO Blood Types

Introduction

Cervical cancer is the most common female cancer in developing countries and one of the leading causes of cancer related death among females.^[1] According to literature various socio-economic factors like low income group, rural population, early age of marriage and increased parity along with age, HPV infections, obesity, administration of oral contraceptives, smoking, Chlamydia infection, and HIV/AIDS infection are few risk factors for carcinoma cervix.^[2] Factors playing important role in etiology and pathogenesis of gynecologic malignancies remain to be difficult to find. In modern era, effective control, prevention and early diagnosis are the key points for successful treatment of this deadly cancer.^[3] Recently clinical significance of the ABO blood group system extends beyond transfusion practice and several reports have suggested an important involvement in the development of various cardiovascular, oncological and infectious disease because along with their expression on red blood cells, ABO antigens are also highly expressed on the surface of a variety of cells and tissues, including the surface epithelium, sensory neurons, platelets, and the vascular endothelium.^[4] Cui and collaborators reported that ABO type antigens are expressed at low levels in normal

cervical tissue but are expressed at higher frequency in cervical carcinoma tissues.^[5] Two studies have shown that cervical cancer is highly prevalent among individuals of blood group A along with a weak association with blood group B.^[6,7] Other studies found no significant relation of blood group to the occurrence of carcinoma cervix.^[8,9] As ABO blood group distribution different among different geographical location, blood group distribution among South Gujarat region is B>O>A>AB with frequency of 34.43%, 32.26%, 24.35% and 4.87% respectively.^[10]

Based on this background, present study was carried out to find out relationship between ABO blood types and cervical carcinoma in tertiary care hospital, South Gujarat region. With available data, till date, very few studies were done in India and it was first study held in Gujarat.

Materials and Methods

Present study is an observational retrospective study conducted in Department of Pathology, tertiary care centre, Surat. A total of 147 female patients, who were histopathologically proven cervical carcinoma on received biopsy and hysterectomy specimen, admitted in the institute during the past two and half year period, constituted the cases. A written informed conscious consent was obtained

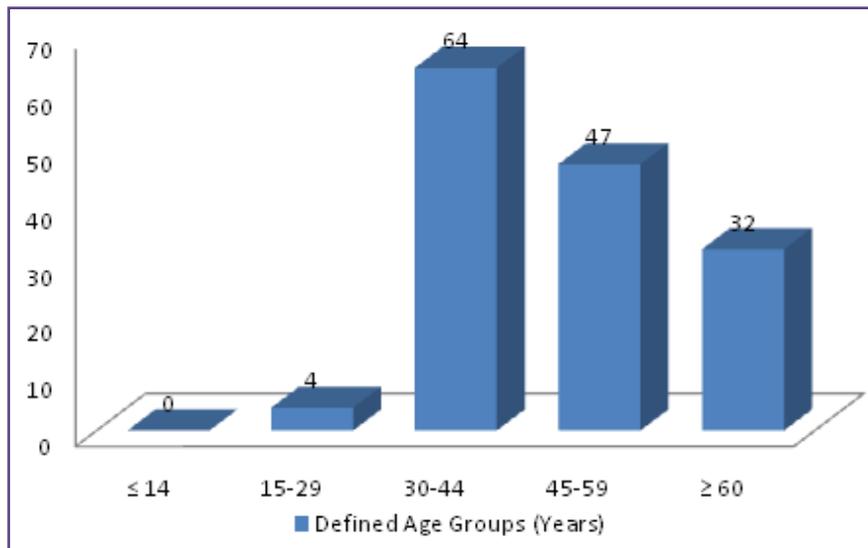
from all subjects before their participation. Data regarding the patient's age, sex and pathological status of cancer patients were retrieved from department of pathology and data regarding blood groups of patients were obtained from Department of Immunohaematology and blood transfusion. Data were analyzed using SPSS software version 20, EPI info and Microsoft Excel and descriptive statistics- frequency percentage- was applied.

Results

In present study, among 147 cases of cervical carcinoma, maximum cases were found with age group of 30- 44 years with mean age of 47 years (Chart 1).

Among total 147 cases of cervical carcinoma, maximum cases (64) were found with age group of 30-44 years followed by 45-59 years (47), 60 years and above (32 cases) and least (4 cases) were found with age group of 15- 29 years. Mean age of cervical carcinoma patient is 47 years.

Among 147 cases of cervical carcinoma, maximum frequency was found with blood group A (31.97%) followed by group B (29.93%), O (27.21%), AB (10.88%) (Chart 2). Compare to blood group preponderance in general population of south Gujarat region, preponderance of blood Group A was found in cervical carcinoma patients.



(Digital numbers demonstrate in chart 1, indicate total no. of cases in defined age group)

Chart 1: Distribution of cases among defined age groups:

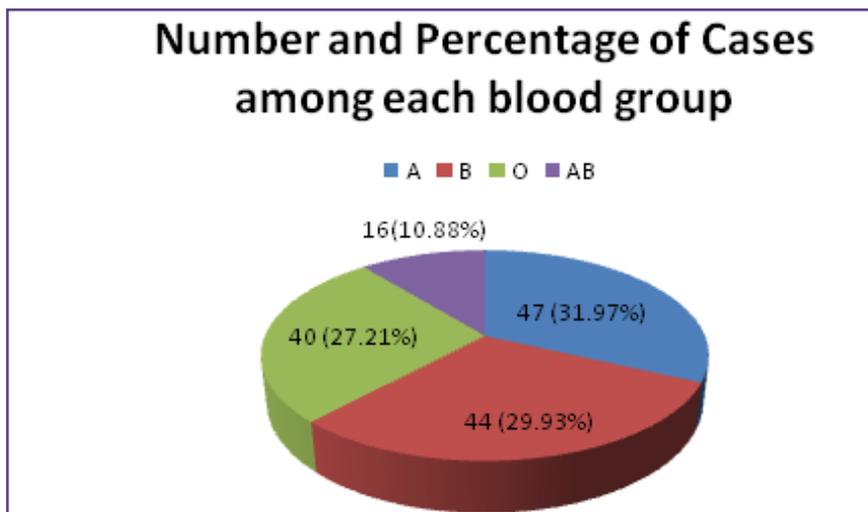


Chart No. 2: Distribution of cases according to ABO blood group system

Discussion

Cervical cancer is one of the leading causes of death from cancer among women worldwide and is the most common female cancer in developing countries^[1]. Etiopathogenesis of cervical cancer is the result of various socioeconomic factors, environmental factors and genetic inheritance which can play important role in pathogenesis of cervical cancer.^[2] The ABO blood group is an easily accessible factor in patient's genetic makeup, has been associated with many diseases including cancer.^[11] Various studies have been done to prove any association between ABO blood group and cervical carcinoma.

In 1921, Alexander first observed that blood group B and AB are more prone to get various forms of neoplasm, while blood group O appears to be more stable and resistant. Johannsen et al. showed that higher incidence of carcinoma cervix with blood group A but it is not statistically significant.^[12,13] One study done by Schroder et al. 1955 showed a strong association between gynecological malignancy with blood group A, and a weaker association with blood group B.^[6] Study done by kaur et al., 1992 showed strong association between incident of carcinoma of cervix and blood group A and weaker association with blood group B.^[7] Another retrospective analysis of 968 Italian women done by Marinaccio et al., 1995 has observed that gynecological tumors including ovarian, endometrial and cervical cancer are more in women with the blood type A and blood type A was associated with poor prognosis for ovarian and endometrial cancer.^[14] Study done by Yuzhalin et al (2012) comprised 172 cases of cervical carcinoma in South East Siberia showed predominance of blood group A (36.0%) and group O (36.01%).^[15]

There may be some association between cervical carcinoma and blood group, but there is no clear explanation about its role in pathogenesis. However, it is reported that the ABO type antigens are expressed at low levels in normal cervical tissue but are expressed at higher frequency in cervical carcinoma tissues. Cui and collaborators reported that presence of an A-like antigen (MRG-1) in cervical tissues and suggested that persons with blood group A and AB are more susceptible to tumor since they do not have anti A antibodies which can eliminate tumor cells by killing.^[5]

¹⁾Preponderance of A blood group in women of cervical carcinoma in present study was consistent with findings of above described study.

However, study by Sharma et al on 108 cases in Bhopal, showed almost similar frequency of blood group B (36.11%) and O (35.99%) followed by A (19.44%) but revealed a lack of association between ABO blood groups with cancer of the cervix.^[16] Another study done by Akhtar et al on 406

patients in Northern India, showed predominance of blood group B (37.9%).^[11] Lee Jun Kai et al study on 100 cases of cervical cancer patients in semi urban population in India found a statistically significant higher incidence of carcinoma cervix among blood group B (55%) patients.^[17] Although inconsistent with the work of other researchers, it was consistent with the work of Alexander^[12]. Blood group A (12%) in their study showed relatively low incidence, even lower than that of blood group O (29%). Similarly, Mitra et al (1962)^[18] showed predominance of blood group B (39.51%), among 521 cases of cervical patients in Calcutta.

In a study by Vailant et al, 319 patients showed higher association of carcinoma cervix with blood group O compared to blood groups A, B or AB.^[1] Similarly in study by Rotkin et al, they also reported predominance of O blood group in cervical carcinoma of patients.^[19] Tyagi et al found that AB blood group has a significant higher risk compared to the stable blood group O in relation of carcinoma cervix.^[20]

ABO blood group phenotype is different among different region hence distribution among cervical carcinoma is also different for particular region and also heterogeneity in result largely depends on study design, sample size, races, socioeconomic status, and other associated factors like sexual partners, number of biological fathers, number of children and the use of contraceptive.^[1] Further statistical analysis required to prove association among carcinoma for that particular region and for other associated factors.

Blood group antigens AB and H expression on cervical cancer cells has been linked with good prognosis and shown to be a predictor of patient survival. The expression of ABH antigens on premalignant and malignant cervical lesions should be investigated as a possible diagnostic and classification tools in cervical neoplasm.^[1]

Conclusion

There was a slightly higher frequency of blood group A among cervical carcinoma in south Gujarat women when compared with others blood group and with general healthy population in South Gujarat region. But we couldn't find strong association of ABO blood group system and incidence of carcinoma cervix. However, large population base study is required to validate these findings.

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