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Original article

ABO Blood group and Cholelithiasis.

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Abstract :

The aim of the study was the analysis of the association between ABO blood groups and the prevalence of gall stone disease. 400 patients (250 female and 150 male) of cholelithiasis who had undergone laproscopic cholecystectomy and 400 (250 female and 150 male) healthy subjects were studied as control group. This study did not reveal significant statistical correlation between the distribution of ABO blood group and the prevalence of gall stone disease.

Keywords: ABO blood group, Gall Stone, Cholelithiasis, Cholecystectomy.

Introduction :

Gallstones are the most common biliary pathology which in developed countries occur in 15% of females and in 7% of males.[1] They are asymptomatic in majority (>80%) of cases. Approximately 1-2% of asymptomatic patients will develop symptoms requiring cholecystectomy per year, making cholecystectomy one of the most common operation performed by the general surgeons.[2] Cholelithiasis is multifactorial and is related with age, parity, weight and diet.[3]

Blood group antigens have relationship with diseases. Several studies have been made to reveal the possible association between the different blood groups and diseases, such as cholera[4,5] ovarian cancer[6], coronary artery disease [7,8]. Review of related literatures have shown the existence of relationship between ABO blood groups and frequency of cholelithiasis.[9] In Bangladesh no such study was conducted, though cholelithiasis is very common here. Current study was conducted to find out association between different ABO blood groups and the risk of cholelithiasis in our population.

Methods :

In this retrospective case control study, we have reviewed the records of patients of Barakah General Hospital who have registered between June 2013 to December 2013 for laparoscopic cholecystectomy. Total 400 patients (male-150, female-250) of different ages were selected for this study. Before admission for surgery all patients had the records of their blood group, USG of upper abdomen and lipid profile. We only consider the ABO blood group of the patients for our study.

Control – Total 400 healthy (without cholelithiasis) volunteers (staff and students of East West Medical College (male-150, female 250) were included as control. Standard slide agglutination test for determination of ABO blood group of all subjects were done.

Data, thus obtained were analyzed statistically to determine any association between cholelithiasis and different ABO blood groups. Data was expressed as percent and absolute number of frequency. By determining the frequency distribution of a particular blood group in cholelithiasis patients and control subjects, the odds ratio for cholelithiasis was calculated to identify the gradation of risk for a particular blood type for cholelithiasis as follows-

Risk ratio for cholelithiasis = frequency % of a particular blood group in cholelithiasis patient/ frequency % of the same particular blood group in control subjects.

One sample Chi-Square test was further applied to determine whether any significant association exists between the frequency of a blood group in cholelithiasis patients (observed) and in control (expected).Chi-square statistic and probability were determined by using SPSS version 20 at 95% confidence limit and P value < 0.05 was considered as level of significance.

Results :

The result of this study showed that the most frequent blood group was B in both female and male control group followed by A,O and AB in female and O,A and AB in case of male (Figure1and2).Table I shows comparison of risks of cholelithiasis in males, females and total subjects. Table II shows the results of Chi square test. No significant association was found between particular type of blood group and cholelithiasis.

Table I: Percent distribution of ABO blood groups and risk of Cholelitiasis in different blood groups (total n=400)

Blood group	Male(150)			Female(250)			Total(400)		
	Chole lithiasis (n=150)	Control (n=150)	Risk ratio	Chole lithiasis (n=250)	Control (n=250)	Risk ratio	Chole lithiasis (n=400)	Control (n=400)	Risk ratio
O	32.6	28.6	1.139	33.2	27.2	1.22	33	27.75	1.89
A	25.3	24	1.054	29.6	30.4	0.973	28	28	1
B	32.6	37.3	0.873	29.2	36.8	0.793	30.5	37	0.82
AB	9.3	10	0.93	8	5.6	1.428	8.5	8.5	1

Table II: One Sample Chi-Square table for associoation of blood group frequency with Cholelitiasis

		Blood Groups				P-value
		O	A	B	AB	
Female	Expected frequency of cholelithiasis	68	76	92	14	0.190^{ns}
	Observed frequency of cholelithiasis	83	74	73	20	
Male	Expected frequency of cholelithiasis	43	36	56	15	0.814^{ns}
	Observed frequency of cholelithiasis	49	38	49	14	
Both sexes	Expected frequency of cholelithiasis	111	112	148	29	0.194^{ns}
	Observed frequency of cholelithiasis	132	112	122	34	

ns=Not significant

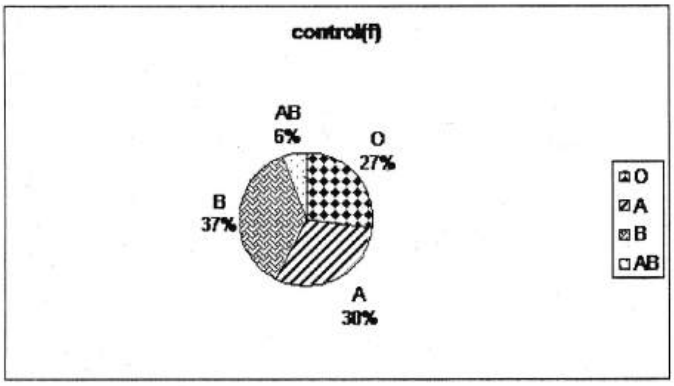


Figure 1: a) Distribution of different blood groups in female control subjects

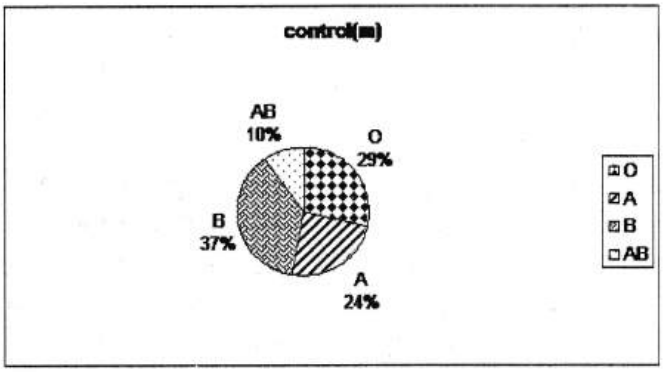
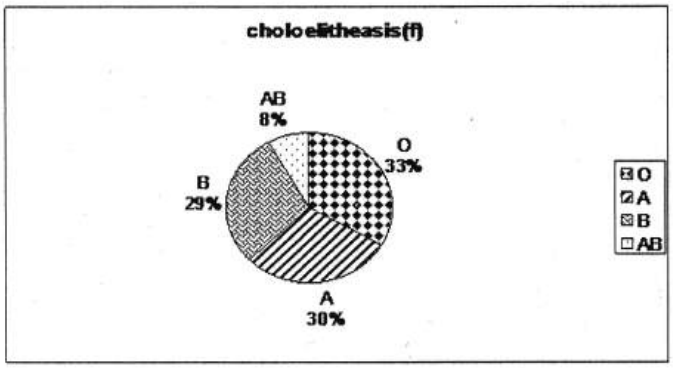
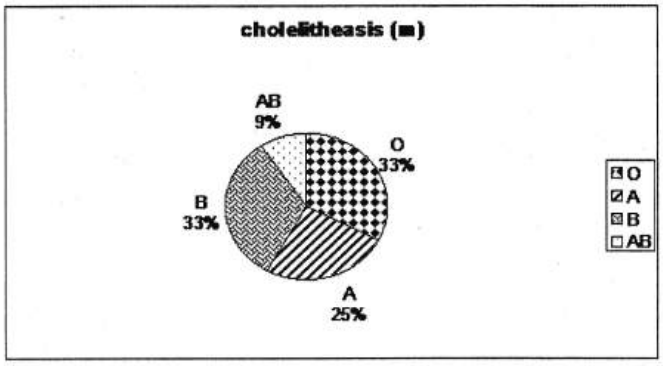


Figure2: a) Distribution of different blood groups in male control subjects



b) Distribution of different blood groups in female cholelithiasis patients



b) Distribution of different blood groups in male cholelithiasis patients

Discussion :

The purpose of this study was to find out the association between different ABO blood group and cholelithiasis. Results revealed no significant correlation between various types of ABO blood group and cholelithiasis. Similar findings were reported by the various investigators from different countries.[10,11,12] In contrast to this, a predominance of cholelithiasis was found in 'O'group patients in another study.[9] Some researchers found higher incidence of cholelithiasis and carcinoma of gall bladder

(a) in A blood group patients.[13,14,15]

Conclusion :

Considering all these previous varying results from different parts of the globe this study was attempted to evaluate the association of ABO blood group with symptomatic cholelithiasis in Bangladeshi people. The result revealed no significant statistical correlation between cholelithiasis and ABO blood group in our population.

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