A Prospective Study of Analysis of Correlation of Abo Blood Groups with Coronary Artery Disease

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Abstract: *ABO Blood group system is a well known risk factor clinically linked to thrombotic vascular diseases.Since 1901 When DR.Carl Landsteiner discovered the Blood groups it has been linked with Cognitive Impairment,Preeclampsia ,Bleeding and Longevity.ABO Blood group may also be related to caisation of Coronary artery disease.We did a Prospective study on Patients Who were admitted to the Intensive Coronary Care Unit Of Coimbatore medical College Hospital And tried to correlate the Various Blood Groups with Coronary Artery Disease*
Keywords: *Blood Groups,Coronary Artery Disease ,Complications,Risk Factors in MI,Thrombotic Factor-*

I. Introduction

The current study was aimed to analyse the common ABO blood groups associated with Coronary Artery disease

Aim Of The Study: To Examine Patients admitted in the ICCU with chest pain

To analyse whether they are Hypertensive,Diabetic,Smokers,Alcoholics

To Check their ABO Blood groups

To analyse the Complications encountered during their stay

Materials And Methods: The present study was conducted at Coimbatore Medical College Between January 2016 to June 2016 for a period of 6 months as an observational study

Inclusion Criteria: All patients with chest pain and diagnosed to have Coronary artery disease while admitted to ICCU were included

Exclusion Criteria: Those patients who were admitted but found to have Non cardiac chest pain were excluded from the study A Detailed History regarding chest pain and risk factors like Hypertension,Diabetes Mellitus,Smokind,Alcoholism was taken

Investigations done 12 lead ECG and ABO blood grouping done

II. Results And Observation

Age group analysis-50% of patients belonged to 40-60 yrs age group,29%of patients belonged to 60-80 yrs age group Sex distribution-80% males and 19% females Hypertension-33.3% were hypertensive and 66.7% were non hypertensive Diabetes-27.7% were diabetic and 72.3% were non diabetic Smokers-62.4% were smokers and 37.6% were not smokers Alcoholics-41.8% were alcoholics and 58.2% were not alcoholics

Prevalence of blood groups among Myocardial Infarction patients-

B+ was the commonest blood group followed by O+ and A+ to cause MI

Proportion of patients who developed complications-

7.1% had developed complications of which Complete heart block followed by LBBB and RBBB

4 patients from blood groups O + and B+ developed complications

III. Conclusions

1) The commonest age group was 40-60 yrs to develop Myocardial Infarction

2) Male sex was predominantly affected

3) 30% patients had risk factors of Hypertension/Diabetes mellitus

4) 60% patients were smokers

5) The commonest ABO Blood group implicated was B+ followed by O+ and A+ blood groups

6) The commonest complication was Complete Heart Block followed by Bundle branch blocks

7) Anterior wall MI was the commonest followed by Inferior wall MI

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Table 1: Background characteristics:

S.No	Particulars	Number (N = 141)	Percentage (%)
1	**Age Group In Years**		
	20-40	27	19.1
	40-60	71	50.4
	60-80	42	29.8
	>80	1	0.7
2	**Sex**		
	Male	114	80.9
	Female	27	19.1
3	**Hypertension**		
	Yes	47	33.3
	No	94	66.7
4	**Diabetes**		
	Yes	39	27.7
	No	102	72.3
5	**Smoking**		
	Yes	88	62.4
	No	53	37.6
6	**Alcohol Use**		
	Yes	59	41.8
	No	82	58.2

Table 2:

S.No	Blood Group	Number (N = 141)	Percentage (%)
1	O+	39	27.7
2	A+	29	20.6
3	B+	55	39.0
4	Ab+	8	5.7
5	O-	3	2.1
6	A-	4	2.8
7	B-	2	1.4
8	Ab-	1	0.7

Patients with B+ (39%)Blood group are more prone to develop MI, followed by those with O+(27.7) and A+ (20.6)

Table 3: Proportion of MI patients who developed any one complication

S.No	Comlication	Number (N = 141)	Percentage (%)
1	Yes	10	7.1
2	No	131	92.9

Table 4: Complication:

S.No	Type Of Complication	Number (N=10)*	Percentage
1	Heart Block	1	10
2	Complete Block	2	20
3	Vsr	1	10
4	Lbbb	2	20
5	Rbbb	2	20
6	Hocm	1	10
7	Old Iwmi	1	10

*131 had no complications. Only 10 patients had complication

Table 5: Complications and blood group of patients

		Complication		Total
		yes	No	
bloodgp	O+	4	35	39
	A+	2	27	29
	B+	4	51	55
	AB+	0	8	8
	A-	0	4	4
	B-	0	2	2
	0-	0	3	3
	AB-	0	1	1
Total		10	131	141

4 patients each from 0+ and B+ developed complications. 2 patients having A + blood group had complications. 1 patient from AB − had complications.

Table 5: Complication:

S.No	Type Of Complication	Number (N=10)*	Percentage
1	Heart Block	1	10
2	Complete Block	2	20
3	Vsr	1	10
4	Lbbb	2	20
5	Rbbb	2	20
6	Hocm	1	10
7	Old Iwmi	1	10

*131 had no complications. Only 10 patients had complication

Statistics

		age group	sex	hypertension	diabetes	smoking	alcohol	Complication	bloodgp
N	Valid	138	141	140	141	141	141	138	140
	Missing	4	1	2	1	1	1	4	2

AGe group

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	30 - 40	24	16.9	17.4	17.4
	40- 50	38	26.8	27.5	44.9
	50 - 60	33	23.2	23.9	68.8
	60 -70	30	21.1	21.7	90.6
	70 -80	12	8.5	8.7	99.3
	> 80	1	.7	.7	100.0
	Total	138	97.2	100.0	
Missing	System	4	2.8		
Total		142	100.0		

sex

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	114	80.3	80.9	80.9
	female	27	19.0	19.1	100.0
	Total	141	99.3	100.0	
Missing	System	1	.7		

		Frequency	Percent		
Total		142	100.0		

hypertension

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	47	33.1	33.6	33.6
	no	93	65.5	66.4	100.0
	Total	140	98.6	100.0	
Missing	System	2	1.4		
Total		142	100.0		

diabetes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	39	27.5	27.7	27.7
	no	102	71.8	72.3	100.0
	Total	141	99.3	100.0	
Missing	System	1	.7		
Total		142	100.0		

smoking

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	88	62.0	62.4	62.4
	no	53	37.3	37.6	100.0
	Total	141	99.3	100.0	
Missing	System	1	.7		
Total		142	100.0		

alcohol

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	59	41.5	41.8	41.8
	no	82	57.7	58.2	100.0
	Total	141	99.3	100.0	
Missing	System	1	.7		
Total		142	100.0		

Complication

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	10	7.0	7.2	7.2
	no	128	90.1	92.8	100.0
	Total	138	97.2	100.0	
Missing	System	4	2.8		
Total		142	100.0		

bloodgp

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	O+	38	26.8	27.1	27.1
	A+	29	20.4	20.7	47.9
	B+	54	38.0	38.6	86.4
	AB+	8	5.6	5.7	92.1
	A-	4	2.8	2.9	95.0
	B-	2	1.4	1.4	96.4
	0-	3	2.1	2.1	98.6
	AB-	1	.7	.7	99.3
	14.00	1	.7	.7	100.0
	Total	140	98.6	100.0	

Missing	System	2	1.4		
Total		142	100.0		

diagnosis

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	AWMI	75	52.8	53.2	53.2
	IW/RV/PW	3	2.1	2.1	55.3
	IVMI	42	29.6	29.8	85.1
	IW/RW	3	2.1	2.1	87.2
	IW/RV	2	1.4	1.4	88.7
	NSTEMI	1	.7	.7	89.4
	IWMI/RV	1	.7	.7	90.1
	HLWMI	1	.7	.7	90.8
	IW/PW/RV	2	1.4	1.4	92.2
	IWMI/PV/RW	1	.7	.7	92.9
	ASMI	4	2.8	2.8	95.7
	IW/RV/PV	3	2.1	2.1	97.9
	ALMI	3	2.1	2.1	100.0
	Total	141	99.3	100.0	
Missing	System	1	.7		
Total		142	100.0		

Correlations

		diagnosis	bloodgp
diagnosis	Pearson Correlation	1	.022
	Sig. (2-tailed)		.797
	N	141	140
bloodgp	Pearson Correlation	.022	1
	Sig. (2-tailed)	.797	
	N	140	140

bloodgp * sex Crosstabulation

Count

		sex		Total
		male	female	male
bloodgp	O+	29	9	38
	A+	26	3	29
	B+	44	10	54
	AB+	8	0	8
	A-	2	2	4
	B-	2	0	2
	0-	0	3	3
	AB-	1	0	1
	14.00	1	0	1
Total		113	27	140

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	19.829(a)	8	.011
Likelihood Ratio	19.106	8	.014
Linear-by-Linear Association	.507	1	.476
N of Valid Cases	140		

a 11 cells (61.1%) have expected count less than 5. The minimum expected count is .19.

Symmetric Measures

		Value	Asymp. Std. Error(a)	Approx. T(b)	Approx. Sig.
Interval by Interval	Pearson's R	.060	.094	.711	.478(c)
Ordinal by Ordinal	Spearman Correlation	.023	.093	.275	.783(c)
N of Valid Cases		140			

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

bloodgp * diagnosis Crosstabulation
Count

		Diagnosis													Total
		AWMI	IW/R VV/P W	IVMI	IW/R W	IW/ RV	NSTE MI	IWMI /RV	HLWMI	IW/PW /RV	IWMI/P V/RW	AS MI	IW/RV /PV	AL MI	AWM I
Blood gp	O+	22	0	10	1	0	1	0	0	0	1	1	1	1	38
	A+	15	0	11	0	0	0	0	1	0	0	0	1	1	29
	B+	28	2	15	1	1	0	1	0	1	0	3	1	1	54
	AB+	6	0	2	0	0	0	0	0	0	0	0	0	0	8
	A-	1	1	2	0	0	0	0	0	0	0	0	0	0	4
	B-	1	0	0	0	1	0	0	0	0	0	0	0	0	2
	O-	0	0	2	0	0	0	0	0	1	0	0	0	0	3
	AB-	1	0	0	0	0	0	0	0	0	0	0	0	0	1
	14.00	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Total		74	3	42	3	2	1	1	1	2	1	4	3	3	140

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	137.835(a)	96	.003
Likelihood Ratio	56.477	96	1.000
Linear-by-Linear Association	.067	1	.796
N of Valid Cases	140		

a 111 cells (94.9%) have expected count less than 5. The minimum expected count is .01.

Symmetric Measures

		Value	Asymp. Std. Error(a)	Approx. T(b)	Approx. Sig.
Interval by Interval	Pearson's R	.022	.068	.258	.797(c)
Ordinal by Ordinal	Spearman Correlation	.047	.085	.556	.579(c)
N of Valid Cases		140			

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.