General Medicine

A CORRELATIONAL STUDY BETWEEN SEVERITY OF COVID 19 INFECTION AND ABO BLOOD GROUPING

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ABSTRACT

INTRODUCTION: COVID 19 which was emerged in WUHAN city of China has now emerged as global disease. Millions of people were infected with this virus, with variable severities. While most of the people had mild infection, few were severely effected, leading to death. The severity of infection was predicted with various investigations, among which HRCT-Chest was widely used in knowing the severity of disease. CT Severity Score of chest is taken as a semi quantitative indicator of lung involvement in COVID 19 to assess in disease burden. On doing all routine investigations it was found that people with blood group A were severely effected while with blood group O were more protective.

METHODOLOGY: Retrospective studies were done in all the patients who were admitted in our hospital with COVID 19 infection. Severity of all patients was analyzed using CT severity score. Based on lung involvement CT severity has been categorized as mild, moderate and severe.

RESULTS: On doing HRCT-Chest for all the 1614 patients the severity score in patients with Blood group A was 14.1 out of 25 (moderate severity), while the severity score in blood group AB,B were 9.9 and 8.8 respectively (mild to moderate severity). In patients with blood group O the CT-SS was 6.5(mild severity).

CONCLUSION: COVID-19 Patients with blood group-A were prone to high severity of infection while patients with blood group O were having least severity of infection and relatively protected.

KEYWORDS : COVID-19, ABO Blood grouping, CT-SS

INTRODUCTION

COVID 19 which was emerged in WUHAN city of China has now emerged as global disease. Millions of people were infected with this virus, with variable severities. While most of the people had mild infection, few were severely effected, leading to death. The severity of infection was predicted with various investigations, among which HRCT-Chest was widely used in knowing the severity of disease. CT Severity Score of chest is taken as a semi quantitative indicator of lung involvement in COVID 19 to assess in disease burden. On doing all routine investigations it was found that people with blood group A were severely effected while with blood group O were protective.

The relationship between ABO blood group system and various diseases have never creased. ABO blood group statistically and biologically related to many chronic diseases such as CHD, Tumorigenesis. Recently association between blood groups and certain viral infections have increased attention. Previous studies showed association between ABO blood groups and host susceptibility to infectious diseases including SARS-COV 2, H.Pylori, Norwalk virus, Hep-B virus.

People who have Anti-A Antibodies prevent the attachment of SARS-COV 2 virus spike protein to ACE-2 receptors and have decreased the virus severity in body. Hence O blood group was protective and A blood group were more susceptible for infectivity of SARS-COV 2 virus.

METHODOLOGY

Studies were done in VMKVMCH by general medicine department for duration of 4months between March 2021 to June 2021.

SAMPLE SIZE

A total of 1614 patients were included in study after getting consent from them.

INCLUSION CRITERIA

All the patients admitted with COVID pneumonia infection confirmed with RTPCR positive for COVID-19.

EXCLUSION CRITERIA

• Pneumonia patients having RTPCR negative for COVID 19
• Pregnant ladies
• Paediatric cases

LAB AND IMAGING METHODS

Blood investigations : Blood grouping and typing, CBP, RBS ,RFT, Inflammatory markers.

Radiological investigations: HRCT- Chest

DATA COLLECTION

After getting clearance from ethical committee of our institution, following data was collected from patient admission case file : Name, Age, Sex, Comorbidities, vitals during hospital stay, CT severity scoring.

STATISTICAL ANALYSIS

Using SPSS software, the data was manipulated and significant testing was done. All the patients were categorized into 3 classes based on CT-SS

CT-Severity score	Category
<9/25	Mild
9-15	Moderate
>15/25	Severe

RESULTS AND DISCUSSION

During my studies 1614 symptomatic patients with RT-PCR positive for COVID-19 were done with following investigations including - Blood grouping, CBC, CRP, ESR, LDH, D-dimer, Sr.Ferritin. HRCT Chest was done for all the patients and CT-SS was calculated.

• In patients with blood group A (n=459-28%) the mean CT-SS was 14.1 which indicates moderate severity
• Similarly in patient with blood group B (n=417-25.4%) the mean CT-SS was 8.8 (mild-moderate severity)
• In patients with blood group AB (n=84-5%) mean CT-SS was 9.9 (mild-moderate severity)
• In patients with blood group O (n=661-41.5%) mean CT-SS was 6.5 (mild severity)

Table showing Demographic features including patients age & gender in relation to their blood group

Blood group	A	B	AB	O
Mean age	53.1	42.9	48.1	52.2
Male	261	237	98	390
Female	198	180	36	291

Table showing blood group A and O have the highest and least mean CT-SS with P value 0.016 and 0.051 respectively which suggests strong correlation between blood groups and severity of COVID-19 pneumonia.

Blood group	Mean CT-SS	P-value
A	14.1	0.016
B	8.8	0.235
AB	9.9	0.199
O	6.5	0.051

P value <0.1 suggests significance

LIMITATION

Being a retrospective study done in a single hospital and patients belonging to a single race the data cannot be generalized all over the world. The study was limited only to the patients who were not pregnant and do not belong to paediatric age group.

CONCLUSION

From the above studies it can be concluded that patients having blood group A are prone to severe form of COVID pneumonia infection and are more susceptible to increased mortality and morbidity compared to other blood groups.

However patients with Blood group O are considered to be protective and have less probability of morbidity and mortality.

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