BIOSTATISTICS STUDY OF THE RELATIONSHIP BETWEEN COVID-19 AND ABO BLOOD GROUP

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ABSTRACT:

Background: COVID-19 virus has affected most people around the world and caused immune problems. Since its increase in December 2019, many research has been focused on treating the infected. Some studies suggest that there is a relationship between the danger of COVID-19 and ABO blood group. The presented study used reviewing observational documents in Baghdad to study the relations between ABO blood group and danger of infection with COVID-19. Method: The data collected are 140 patients tested positive to COVID-19 from Shaikh Zayed Hospital in Baghdad, Iraq, during May 2020 to January 2021, and used to study the relations between COVID-19 and ABO blood group. The nasopharyngeal (NP) swab was taken from the patients and diagnosed by (PCR) polymerase chain reaction analysis using the qualitative assay kit for the detection of the targets E-gene and N-gene of SARS-CoV-2 RNA, also we detect the blood group of each patient. Conclusion: The result of this study showed the highest percentage of COVID-19 infection and individuals in blood group A (45.71%) while, the lowest percentage in blood group AB (10.71%). Otherwise, the blood group B enrolled in this study (17.86%) and O blood group registered (25.71%) of COVID-19 infections. Rh factor showed the higher percentage of COVID-19 infection and individuals in Rh positive (85.71%) while, the Rh negative registered only (14.29%) of COVID-19 infection.

Keywords: Corona Virus, COVID-19, Blood Group, ABO and COVID-19, Rh Factor and COVID-19.

I. INTRODUCTION

Coronaviruses are a cluster of related RNA viruses that affect respiratory tract of human and the range of infection from mild to lethal. Coronaviruses are big, roughly spherical particles with single surface projections (1).

The negative or positive blood group known as Rhesus (Rh) factor. The Rh factor is a genetic protein that presented on the red blood cell surface. If the blood type is positive, that mean the (Rh) protein is found on the blood cells surface, while negative type mean the red blood cells lack the (Rh) protein (2).

II. MATERIALS AND METHODS

The data were collected are 140 patient who had been examined with COVID-19 during May 2020 to January 2021 in baghdad \ Iraq were collected randomly from Shaikh Zayed Hospital in Baghdad. All the data had a tested positive with covid-19 via a nasopharyngeal (NP) swab, the samples was diagnosis by (PCR) polymerase chain reaction analysis using the qualitative assay kit for the detection of the targets E-gene and N-gene of SARS-CoV-2 RNA, also we detect the blood group of each patient.

III. STATISTICAL ANALYSES

To study the association between ABO blood group and COVID-19. All statistical analyses were performed using System- SAS (2012) program was used to identify the effect of variance elements in study percentage Chi-square test was used to significant compare between percentage (0.05 and 0.01 probability) in this study (3).

IV. RESULT AND DISCUSSION

Results

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Our 140 patient diagnosed with COVID-19 divided depending on blood group (A, B, AB, O) to (64, 25, 15, 36) respectively. 120 patient are with Rh positive while, only 20 patient with Rh negative.

According to table (1) the result showed a highest percentage of COVID-19 risk infection and individuals in blood group A (45.71%) while, the lowest percentage in blood group AB (10.71 %). Otherwise the blood group B enrolled in this study (17.86%) and O blood group registered (25.71%) of COVID-19 infections.

Also the Table (2) showed the higher percentage of COVID-19 risk infection and individuals in Rh positive (85.71) while, the Rh negative registered only (14.29%) of COVID-19 infection.

Table 1. Distribution of Patient’s Numbers with COVID-19 Infection According to Blood Groups

<table>
<thead>
<tr>
<th>Blood group</th>
<th>No. of Patients</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>64</td>
<td>45.71</td>
</tr>
<tr>
<td>B</td>
<td>25</td>
<td>17.86</td>
</tr>
<tr>
<td>AB</td>
<td>15</td>
<td>10.71</td>
</tr>
<tr>
<td>O</td>
<td>36</td>
<td>25.71</td>
</tr>
<tr>
<td>Total No.</td>
<td>140</td>
<td>100%</td>
</tr>
<tr>
<td>Chi-Square ($\chi^2$)</td>
<td>---</td>
<td>38.342 **</td>
</tr>
</tbody>
</table>

** (P≤0.01).

Table 2. Distribution of Patient’s Numbers with COVID-19 Infection According to Rh Factor

<table>
<thead>
<tr>
<th>Rh Blood group</th>
<th>No. of Patients</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rh +</td>
<td>120</td>
<td>85.71</td>
</tr>
<tr>
<td>Rh-</td>
<td>20</td>
<td>14.29</td>
</tr>
<tr>
<td>Total No.</td>
<td>140</td>
<td>100%</td>
</tr>
<tr>
<td>Chi-Square ($\chi^2$)</td>
<td>---</td>
<td>71.478 **</td>
</tr>
</tbody>
</table>

** (P≤0.01).

V. DISCUSSION

In this study, we used positive (+Ve) COVID-19 data in Baghdad/ Iraq from Shaikh Zayed Hospital to study the relationship between ABO blood group and danger of infection; we found a higher risk associated with blood group A (45.71%), and a lesser risk with blood group AB (10.71%). About the relationship between ABO blood group and danger of COVID-19 infection, many studies were similar in recording that blood group A was related with an increased rate COVID-19 individuals and danger of infection, that is the same result recoding in the presented study (4,5,6,7,8).

The lower risk infection with covid-19 recording in blood group AB in this study (10.71%) and this results agree with another researches (9).

Rh factor is genetic protein found in the surface of red blood cells, the presented study showed the higher percentage of COVID-19 infection in Rh positive (85.71) while, the Rh negative registered only (14.29%) of COVID-19 infection, this result similar to many researchers recording the same result (10, 11, 12).

REFERENCES

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