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ORIGINAL ARTICLE

Diabetic COVID -19 Patients are prone to Respiratory Distress Syndrome as compared to Non-Diabetic COVID -19 Patients

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ABSTRACT

Background: COVID-19 is the alarming problem for all over the world due to its fast spread infection mode and uncertainty in mortality rate. The diabetic population is prone for comorbidity with COVID-19 due to injurious fashion develops in respiratory system.
Aim: To compare the serum Lactate dehydrogenase levels in diabetic patients with COVID-19 & non diabetic patients with COVID-19.
Methodology: This comparative study was done at Ali medical center Hala New District Matiari Sindh. 42 diabetic & non diabetic clinically suspected cases COVID -19 with fever, cough, shortness of breath, non-pneumonic opacities on digital X.ray with raised TLC, ESR & CRP. The data analyzed for significance on SPSS 19 by applying student *t* test.
Results: The serum LDH levels was significantly raised ($p<0.001$) in group A contained COVID-19 patients with diabetes as compared to COVID-19 patients with no diabetes mellitus.
Conclusion: COVID -19 diabetic population will be more prone to develop the respiratory complications.
Keywords: COVID-19, Serum LDH, Diabetes Mellitus, Respiratory Distress Syndrome.

INTRODUCTION

Corona virus known as COVID -19 spreading all over the world and one of the leading cause of mortality all over the world now a days.[1] Only at Pakistan more than 6 lac cases were diagnosed up to May 2020.[2] Near 3 lac cases were diagnosed in Province of Sindh up to July 2020.[3] COVID-19 symptoms are fever, cough, dyspnea etc.[4] Lactate Dehydrogenase enzyme found almost all the tissues like liver, muscles, heart, brain, pancreas, bones etc.[5] LDH biochemically important for cellular respiration and also key enzyme for glycolysis and in inflammatory conditions its level will be raised.[6] In the patients of COVID-19 with respiratory manifestations increased levels of LDH indicate the development of respiratory distress syndrome.[7] LDH now a days also use as prognostic tool for the hospitalized patients of COVID-19 with respiratory complications.[8]The diabetic patients with corona virus manifestation are more accelerated development of respiratory symptoms as compared to non-diabetic patients with corona virus manifestation[9].

The objective of the study was to estimate LDH levels to rule out the hypothesis that diabetic patients will be more prone to COVID -19 as compared to Non Diabetic patients.

METHODOLOGY

This case comparative study with Non-probability sampling was done at OPD of Ali Medical Centre Hala New District Matiari Sindh from month of March 2021 to May 2021 after IRB permission. Total 42 patients were participated in this study. The diagnosed cases of type -2 diabetes mellitus with male gender age between 40-55 years with symptoms of fever, cough, shortness of breath with single or double opacities on digital x-ray chest P/A view with Increased Total Leukocyte count on Blood complete picture, raised ESR, and increased C-Reactive Protein (CRP) were included in this study. The cases of Type-1 diabetes, vaccinated cases of COVID-19, female gender, known cases of Liver & Renal disorders, Cancers, with normal CRP were excluded from this study. All cases were divided in to two groups Group A contain 22 cases of Diagnosed cases of Diabetes with clinically symptoms of COVID-19 and Group-B contain 20 cases of non diabetic with clinical symptoms of COVID-19. The Blood CP, CRP, Serum LDH were done from the Agha Khan LabortoryHala New Branch, Asian Diagnostic laboratory Hala New Branch. The data statistically analyzed by the SPSS version 19 by applying independent student '*t*' test. The graphs were drawn by Microsoft excel.

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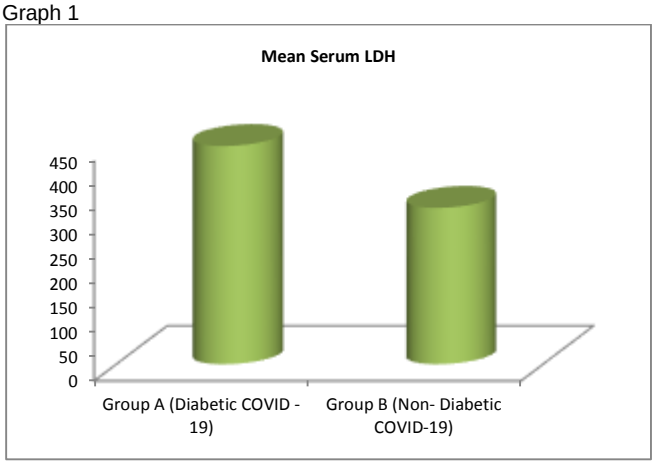
RESULTS

Table 1 shows the mean of age, total Leukocyte count (TLC), ESR & CRP, Random Blood Glucose & HbA1c% of Diabetic & Non-Diabetic group of COVID-19 patients.

Table 2 & graph 1 shows the mean serum lactate dehydrogenase (LDH) levels of both groups; the mean serum lactate dehydrogenase (LDH) of Group A was 448 U/L while mean serum lactate dehydrogenase (LDH) of group B was 321 U/L. The mean Serum LDH level of group A (Diabetic group) significantly ($p <0.001$) raised as compared to group B (Non-Diabetic group).

Graph 1



The Above result suggested that the patients of COVID-19 with diabetes mellitus are more prone to develop respiratory distress problem as compared to Non-Diabetic COVID-19 patients.

Table 1

Parameter	Group A	Group B
Age	50 years	48 years
TLC (10^9/L)	14,000	13,800
ESR (mm/hr)	98	79
CRP (mg/L)	34	26
RBS (mg/dl)	223	141
HbA1c %	9.1	5.0

Table 2:

Parameter	Group A	Group B	P- Value
Serum LDH (U/L)	448	321	<0.001

DISCUSSION

The Diabetes Mellitus is the one of the high prevalence rate in at Asian countries and one of the leading causes of comorbidity and mortality all over the world.[10]COVID -19 is also highly spreading infection and one of the leading cause of mortality all over the world.[11] The death ratio due to COVID -19 is caused by injuries development in respiratory system.[12]LDH is one of the important marker to assess and diagnose the respiratory distress syndrome due to COVID-19.[13]This study concluded that the diabetic patients will be more prone to develop COVID -19 complications like respiratory distress syndrome ($p<0.001$) because their tissues were more injurious which mentioned by serum LDH levels.

Our study also contracted with Zhou.W et al[14] they concluded that serum LDH levels become raised in diabetic COVID-19 patients as compared to corona patients with free from diabetes mellitus ($p<0.05$).

On the other hand J.J.Liang et al [15] concluded in their study that there is no effect on serum LDH levels in diabetic or non diabetic COVID-19 patients until and unless the respiratory distress syndrome developed.

CONCLUSION

This study concluded that there was increased level of serum LDH observed in diabetic patients with COVID-19 as compared to non diabetic patients with COVID-19. So COVID -19 diabetic population will be more prone to develop the respiratory complications.

Conflict of interest: Nil

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