Biochemistry & Physiology: Open Access

ISSN: 2168-9652

Shanshool MT et al, Biochem Physiol 2021, 10:1

Reserch Article Open Access

The Effects of COVID-19 on Some Liver Enzymes Patients at Al Furat General Hospital in Baghdad

Mustafa Tareq Shanshool[1]

Estbraq Tareq Shanshool[2]

Dhurgham Fahad Ftak Al_Ghuraibawi[3]

Corresponding author: Mustafa Tareq Shanshool, E-mail: aubdllaalobaidy@gmail.com

Received date: December 18, 2020; **Accepted date:** January 10, 2021; **Published date:** January 30, 2021

Abstract

Coronavirus has been recognized in October, 2019, but the first infection with the virus in Iraq was identified in the province of Najaf, about 160 km south of Baghdad, on February 24, 2020 and aim of the research Knowing the extent of coronavirus effect on liver function, especially liver enzymes, which play a vital role in the vital processes in the human body 60 samples were collected at Al-Furat General Hospital from patients with COVID-19, of which 38 samples were for men, and 22 samples were for women; the blood was separated to extract serum by the centrifuge, then the results were obtained by an Automatic Biochemistry Analyzer device with Accent-200 and (GPT, ALP, TSB, GOT enzymes) were identified for comparisons between control and patients Through taking a section, analyses were performed for 60 patients, average age was 46, and ages were between 23-75 years. The values of the statistical analyses were clarified when compared to healthy people: the nature of the relationship where it was shown that there is a negative relationship in the amounts of GOT, GPT, ALP Proven by sig, which is higher than 0.05 and research shows that Coronavirus has actual effects on liver function, and the majority of patients have high GOT, GPT ALP due to a clear impact of COVID-19 on the liver enzymes.

Keywords: COVID-19; GOT; GPT; ALP; TSB; SARS.

Introduction

Quality of Coronavirus was recognized in 2019, and the first case was discovered in China in the Wuhan region. When reading the direct impact of these viruses, a significant impact on the work of the liver was found [1]. The occurrence of functional difference and not only this but there was an effect on the clinical characteristics of patients with COVID -19 [2]. This clinical effect was not recognized to this day, and dealing with it has become something vague and not clear-cut and through multiple studies [3].and then proving that liver disease is present in abundance in people with the disease. If we examine it further, we'll find that SARS-Cov2 is similar in the genetic chain to SARS-Cov. Studies related to this subject published in 2004 show that 60% of people with the disease face a risk of liver damage [4].The symptoms of COVID19 were not limited only to the liver, but the effects included all parts of the body COVID-19 patients, including the lungs, heart, and kidneys [5].so that it can damage the intestine and formation Infections in the heart, and this was evidenced by analyzing the urine [6]. This indicates that there was an early presence of kidney damage. Liger said that initial data also shows that 14 to 30% of ICU patients lose kidney function and need dialysis or continuous treatment [7]. The disease can also harm the heart, as doctors in China and New York reported inflammation Heart muscle and arrhythmias, which can lead to cardiac arrest in patients with COVID-19 .Its effect extends to the digestive system, causing disruption in liver function and an increase in its enzymes. It also poses a high risk to liver patients to join the list of groups most vulnerable to severe complications from the virus [8].As for cirrhosis, which occurs, or its impact on people who already or previously have liver diseases, including functional disorders caused by the disease [9]. Clear evidence of attacking it directly on the part, or it may consist of these functional disorders or infections in the liver as a result of the use of medications such as antagonists Vitality and increase the risk to people who already have a chronic disease or have liver damage in this way will lead to complications depending on the type of patient the liver and as for people who suffer from a fatty liver disease where most patients suffer from heart disease and blood pressure which makes them more vulnerable to health problems when infection with the virus[10]. The symptoms of Coronavirus contribute to high levels of the liver and that 35% of patients have had a rise in the levels of liver enzymes and found the effect of coronavirus on the liver as form where the patient who suffers from high levels of enzymes and increased activity in a virus B will be attacked by Coronavirus. In this situation, it is violent for the patient due to significant weakening of the immune system [11]. As for the patients who have liver transplantation, they do not suffer from any of the many problems when infected with the virus as a result of using anti-immunosuppressive drugs [12].

2. Materials and methods

Fig.1.Automatic Biochemistry Analyzer / For Clinical Diagnostic / Benchtop Accent-2000.

2.1. Clinical in Vitro Diagnostic Reagent kit

- *GPT For in vitro diagnostics use R1: 1x30mL R2: 1x8ML.*
- *GOT For in vitro diagnostics use R1: 1x30mL R2: 1x8ML.*
- *ALP For in vitro diagnostics use R1: 1x30mL R2: 1x8ML.*

- *TSB For in vitro diagnostics use R1: 1x24mL R2: 1x5ML*

TSB For in vitro diagnostics use R1: 1x24mL R2: 1x5ML

TSB = 10 µl serum.

ALP = 4 µl serum

GPT = 15 µl serum

GOT = 10 µl serum

2.2. Used equipment's

Fig.2. Syringe, pipette and Gel Tube

2.3. Separation

The device separates the blood components to obtain serum and shown in fig 3 device centrifuge.

Fig.3. Device centrifuge

Table 2
Results of healthy People

p	AGE	TSB (1.70-21) µmol/L	GPT (5-41) U/L	GOT (8-40) U/L	ALP (56-119) U/L
p1	40	7.3	28	11.1	73
p2	55	10.6	25.2	9.9	70
p3	70	7.9	40.2	14.7	88
p4	66	12	33	11.6	90
p5	67	15	37	21.5	59
p6	66	20	48	40	110
p7	45	12	33.3	31.4	118
p8	54	14	41.3	20.1	60
p9	77	11.7	33	16.4	67
p10	83	10	32	18	64
p11	44	12.1	19	22	77
p12	23	8.5	34	27.5	87.4
p13	13	18.9	27.9	22	66.9
p14	28	17.3	29	31	59.9
p15	32	11	19	11	60.4
p16	68	9	9.8	16	67
p17	45	14	34.2	22.6	80
p18	44	6.7	23	9.9	88.7
p19	43	10	12	22.9	73.4
p20	40	11	21.5	33	70.7

Table1
Shown results of patients COVID-19

p	AGE	GANDER	TSB (1.70-21) µmol/L	GPT (5-41) U/L	GOT (8-40) U/L	ALP (56-119) U/L
p1	64	M	9.23	26	43	147
p2	62	F	14.29	26	37	87
p3	48	M	12.7	48	68	45
p4	46	M	12	41	48	65
p5	31	M	10.61	70	33	80
p6	30	M	13.5	59	38	60
p7	42	M	12	40	27	66
p8	47	M	8	35	30	123
p9	44	M	12	42	30	48
p10	31	F	9.82	27	28	60
p11	35	M	12	29	34	37
p12	34	M	10	33	28	86
p13	35	M	8	49	32	73
p14	25	F	11.27	12	17	49
p15	53	F	6.13	26	35	73
p16	25	M	14.81	0	21	48
p17	48	F	7.64	22	38	141
p18	23	M	6.11	32	20	87
p19	70	M	14.07	66	34	128
p20	48	M	12	96	68	58
p21	60	M	14.1	65	56	75
p22	75	M	6.61	19	50	99
p23	42	F	14.3	55	45	56
p24	36	F	6.18	9	20	47
p25	52	M	6.67	17	21	44
p26	60	M	9.71	35	38	70
p27	75	F	23	36	27	59
p28	51	M	12	30	27	66
p29	35	M	10	108	7.9	45
p30	31	M	10	33	37	106
p31	38	M	8.6	33	30	80
p32	18	F	6	10	16	44
p33	35	M	14	66	37	70
p34	33	M	12	47	27	66
p35	19	F	7.74	15	24	55
p36	30	F	8.26	16	31	244
p37	40	M	11.2	10	39	246
p38	29	M	13.8	18	22	71
p39	30	M	6.22	53	35	88
p40	40	M	12	13	21	88
p41	25	M	19.5	29	29	52
p42	40	M	12.3	60	31	75
p43	50	M	34.8	15	24	86
p44	44	M	13.9	36	24	64
p45	27	M	27	35	25	56
p46	35	F	12.5	21	22	76
p47	50	F	17.6	13	22	72
p48	30	F	9.4	9	22	70
p49	16	F	4.6	11	20	114
p50	54	M	12	67	47	113
p51	29	M	15.3	41	35	57
p52	25	M	10	14	26	67
p53	45	F	7.6	29	35	124
p54	39	F	12.9	11	28	58
p55	49	F	11.3	10	20	111
p56	33	F	9	19	23	65
p57	29	F	6.1	13	21	111
p58	50	F	22	18	38	61
p59	70	F	19.5	48	57	49
p60	34	M	10	35	41	74

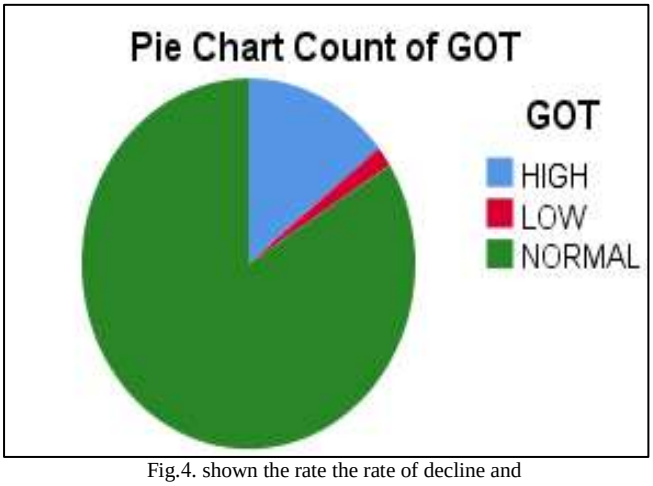

Fig.4. shown the rate the rate of decline and Rise of GOT in Patients CO-19

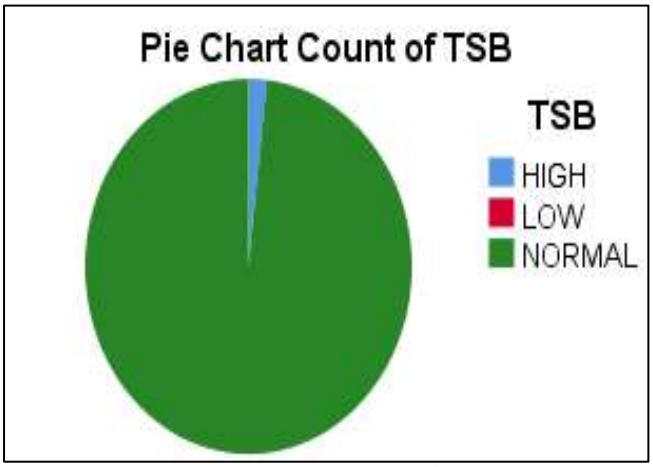

Fig.5. shown the rate the rate of decline and Rise of TSB in Patients CO-19

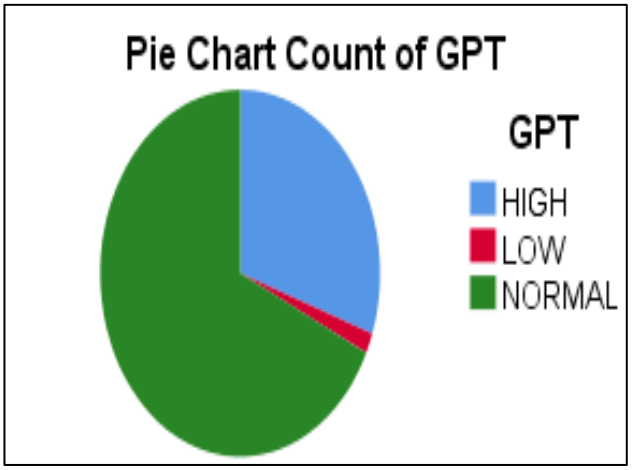

Fig.6. shown the rate the rate of decline and Rise of GPT in Patients CO-19

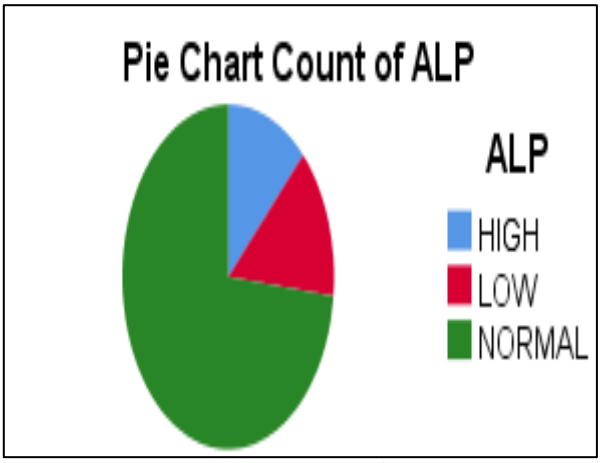

Fig.7. shown the rate the rate of decline and Rise of GOT in Patients CO-19

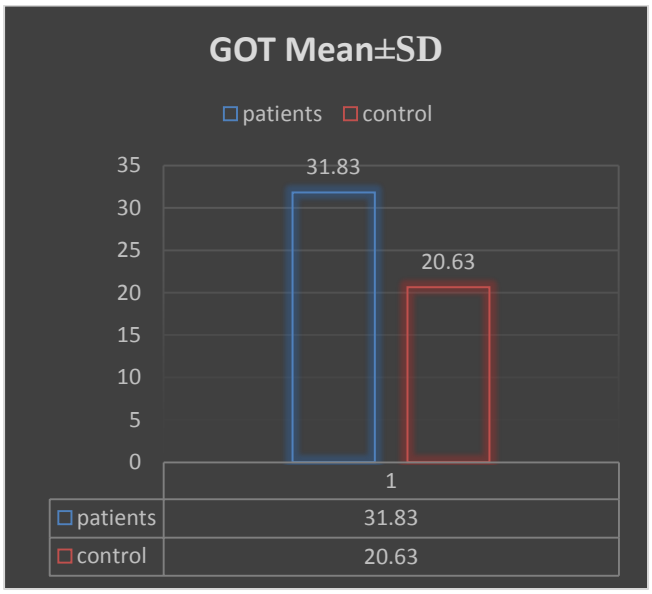

Fig.8. shown the rate the rate of decline and Rise of GOT In Patients CO-19

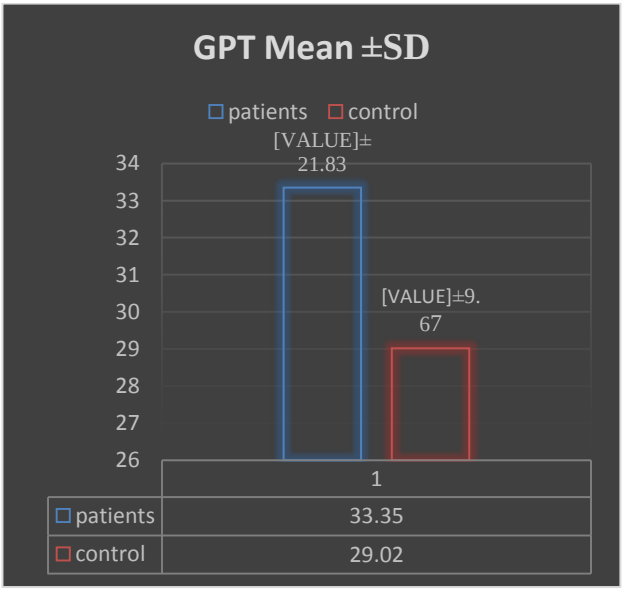

Fig.9. shown the rate the rate of decline and Rise of TSB In Patients CO-19

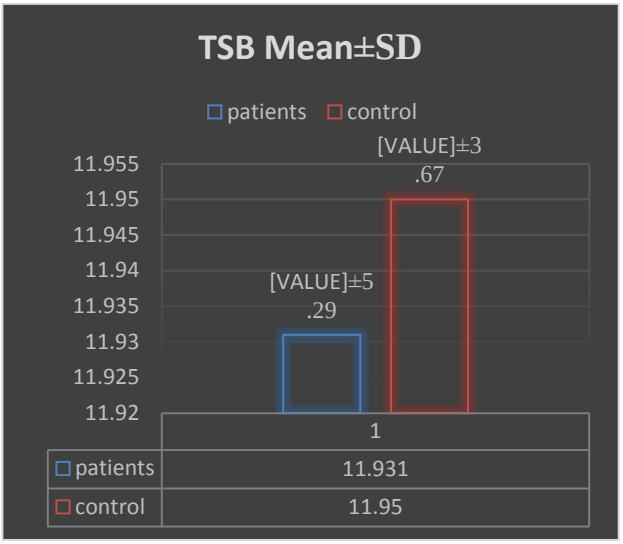

Fig.10. shown the rate the rate of decline and Rise of GPT in Patients CO-19

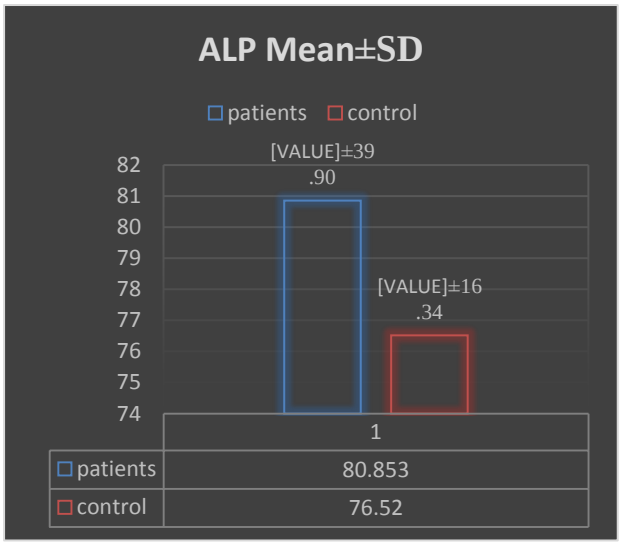

Fig.10. shown the rate the rate of decline and Rise Of TSB in Patients CO-19 in Patients CO-19

Table 3-a
Correlations between control and COVID-19 patients in GOT

Correlations				
			GOT Healthy	GOT Co19
Spearman's rho	GOT healthy	Correlation	1	-0.216
		Sig. (2-tailed)		0.406
			20	20
	GOT CO-19	Correlation	-.216	1
		Sig. (2-tailed)	0.406	
		N	20	60

In these tables that are performed in the results between patients with high levels in some liver enzymes (GPT, TSB, GOT, ALP) and the control group of COVID-19 we notice that the percentage increases by 33% in patients with COVID-19 and the highest rate achieved by 108 if compare enzymes in elevated liver levels[13].

The results also showed that a 5% rate indicates a severe reduction in enzyme levels for patients with COVID-19 patients [15]. In general, we note that In the case of the COVID-19, enzyme levels increase by 15% to 45%, and liver infections are significantly more common among patients [14].

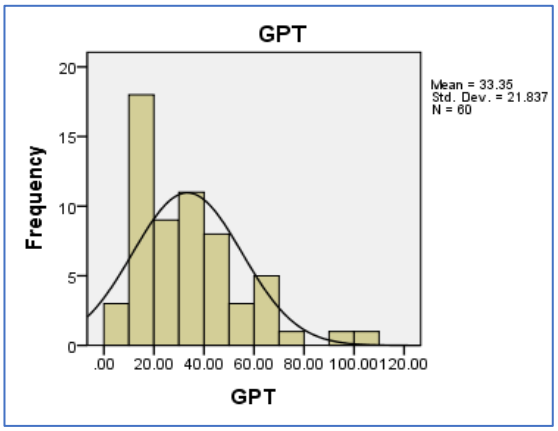

Fig.11. frequency of GPT in Patients CO-19

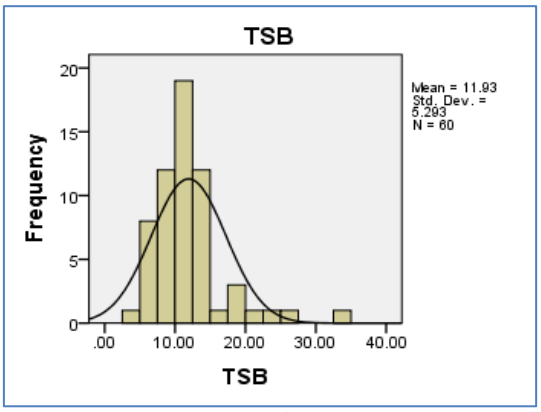

Fig.12. Frequency of TSB in Patients CO-19

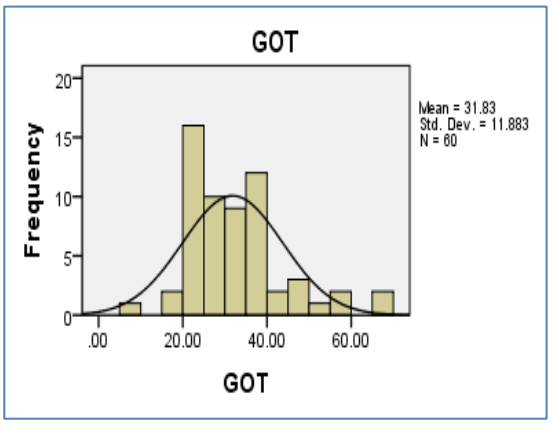

Fig.13. frequency of GOT in Patients CO-19

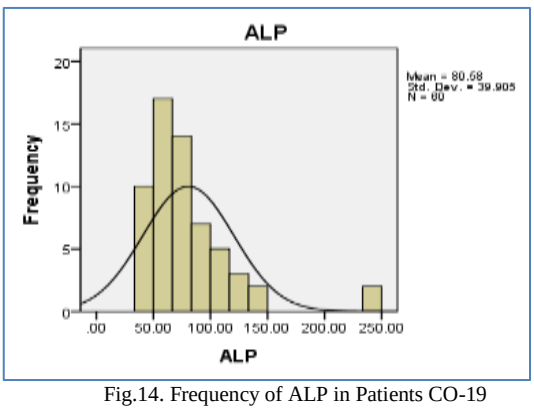

Fig.14. Frequency of ALP in Patients CO-19

Table 3-b
Correlations between control and COVID-19 patients in GPT enzymes

Correlations			
		GPT healthy	GPT CO-19
GPT healthy	Spearman's rho Correlation	1	0.184
	Sig. (2-tailed)		0.436
	N	20	20
GPT CO-19	Spearman's rho Correlation	0.184	1
	Sig. (2-tailed)	0.436	
	N	20	60

Table 3-c
Correlations between control and COVID-19 patients in ALP enzymes

Correlations			
		ALP healthy	ALP CO-19
ALP healthy	Spearman's rho Correlation	1	-0.096
	Sig. (2-tailed)		0.689
	N	20	20
ALP CO-19	Spearman's rho Correlation	-.096	1
	Sig. (2-tailed)	0.689	
	N	20	60

Correlation is significant at the 0.05 level (2-tailed).

Discussion

In this research, values were found through TSB, GPT, GOT, ALP analyzes and evaluation of the necessary analysis to the affected person COVID-19 Patients, After that, healthy people were compared, where clinical results were demonstrated by the presence of symptoms appearing on the patient in the beginning [16,17]

As the current results showed that there are significant differences between persons infected with COVID 19 Patients and healthy people and that there is no direct effect to the following analyzes GPT, GOT, ALP, and TSB on the person's age according to what was shown to us in the outcome. Still, it is difficult to neglect this effect [18]. Relationship It is non-existent, but it is present, and its existence cannot be denied by TSB analysis. Most of the results were normal, and this is what corresponds to it in healthy people, but a percentage was found that represented one value for a person aged 50 years, and the rate was (31.8) [19,20[Glycation of eye lens protein is the major mechanism responsible for diabetic cataract formation. The AGE compounds accumulated around lens protein causes a conformational change in the structure of protein, decreasing protein – protein interactions and protein – water interaction. This reduces the transparency of the eye lens [19]. Experimental evidence revealed an increased AGEs formation around cataract lens and AGEs also have been associated with change of the color and opacity of the eye lens [20].

3.1. Correlation for GOT between COVID – 19 Patients and healthy people

Testing the relationship between GOT between COVID 19 Patients with healthy people noted the Correlation Coefficient is negative and this shows an inverse relationship between GOT between COVID 19 Patients with healthy people and that the significance or (p-value) Sig. (2-tailed) was equal to0.406 and when compared to the level of significance (0.05) we notice that it is smaller than the level of significance and this means that no relationship.

3.2. Correlation for GPT between COVID – 19 Patients and healthy people

Through statistical analysis Test the relationship between GPT healthy people with GPT CO-19 Note this Correlation coefficient is negative and this shows an inverse relationship between Test for the importance of (p-value) (Two-way) It was equal to 0.436 and when compared to the importance level (0.05) We note that it is greater than the level of significance and this means that there is not relationship between GPT healthy people with GPT CO-19 patients.

3.3. Correlation for ALP between CO- 19and healthy People

Statistical analysis demonstrated an inverse relationship between ALP between CO- 19and healthy People by taking 60 samples from patients and 20 from healthy, and the statistical indication of the quality of this relationship showed that it was (P-value) 0.689, i.e. it is greater than 0.05 We note that it is greater than the level of significance and this means that there is not relationship between ALP healthy people with ALP CO-19 patients.

Conclusion

The relationship between GOT, GPT, and ALP analysis was found between infected and healthy people As for TSB, the significant difference between the two groups was not [23[.

The effects of GOT on infected people caused major damage to the liver and were among the main factors leading to liver damage about with COVID-19 Patients [21,22[.

According to the results that proved that age was not one of the main factors, but rather a contributing factor to the increase in poor health for the patient if he suffers from other diseases [23,24.[

If a person who suffers from COVID-19 is healthy from other diseases and contains immunity here, age does not become a contributing factor [25, 26].

References

1. Hui, D.S., Azhar, E.I., Madani, T.A., Ntoumi, F., Kock, R., Dar, O., Ippolito, G., Mchugh, T.D., Memish, Z.A., Drosten, C. and Zumla, A., 2020. The continuing 2019-nCoV epidemic threat of novel coronaviruses to global health—The latest 2019 novel coronavirus outbreak in Wuhan, China. International Journal of Infectious Diseases, 91, pp.264-266.
2. Gorbalenya, A.E., Baker, S.C., Baric, R., Groot, R.J.D., Drosten, C., Gulyaeva, A.A., Haagmans, B.L., Lauber, C., Leontovich, A.M., Neuman, B.W. and Penzar, D., 2020. Severe acute respiratory syndrome-related coronavirus: The species and its viruses – a statement of the Coronavirus Study Group.
3. Chen, N., Zhou, M., Dong, X., Qu, J., Gong, F., Han, Y., Qiu, Y., Wang, J., Liu, Y., Wei, Y. and Yu, T., 2020. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. The Lancet, 395(10223), pp.507-513.
4. Hughes, J.M., Wilson, M.E., Luby, S.P., Gurley, E.S. and Hossain, M.J., 2009. Transmission of human infection with Nipah virus. Clinical Infectious Diseases, 49(11), pp.1743-1748.
5. Wichmann, D., Sperhake, J.P., Lütgehetmann, M., Steurer, S., Edler, C. and Heinemann, A., 2020. Autopsy Findings and Venous Thromboembolism in Patients With COVID-19 [published online ahead of print, 2020 May 6]. Ann Intern Med, pp.M20-2003.
6. Tang, N., Li, D., Wang, X. and Sun, Z., 2020. Abnormal coagulation parameters are associated with poor prognosis in patients with novel coronavirus pneumonia. Journal of thrombosis and haemostasis, 18(4), pp.844-847.
7. Chen, G., Wu, D., Guo, W., Cao, Y., Huang, D., Wang, H., Wang, T., Zhang, X., Chen, H., Yu, H. and Zhang, X., 2020. Clinical and immunological features of severe and moderate coronavirus disease 2019. The Journal of clinical investigation, 130(5).
8. Chen, N., Zhou, M., Dong, X., Qu, J., Gong, F., Han, Y., Qiu, Y., Wang, J., Liu, Y., Wei, Y. and Yu, T., 2020. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. The Lancet, 395(10223), pp.507-513.
9. Diao, B., Wang, C., Tan, Y., Chen, X., Liu, Y., Ning, L., Chen, L., Li, M., Liu, Y., Wang, G. and Yuan, Z., 2020. Reduction and functional exhaustion of T cells in patients with coronavirus disease 2019 (COVID-19). Frontiers in Immunology, 11, p.827.
10. Ianiro, G., Mullish, B.H., Kelly, C.R., Sokol, H., Kassam, Z., Ng, S., Fischer, M., Allegretti, J.R., Masucci, L., Zhang, F. and Keller, J., 2020. Screening of faecal microbiota transplant donors during the COVID-19 outbreak: suggestions for urgent updates from an international expert panel. The Lancet Gastroenterology & Hepatology, 5(5), pp.430-432.

11. Bermingham, A., Chand, M.A., Brown, C.S., Aarons, E., Tong, C., Langrish, C., Hoschler, K., Brown, K., Galiano, M., Myers, R. and Pebody, R.G., 2012. Severe respiratory illness caused by a novel coronavirus, in a patient transferred to the United Kingdom from the Middle East, September 2012. Eurosurveillance, 17(40), p.20290.
12. Geller, C., Varbanov, M. and Duval, R.E., 2012. Human coronaviruses: insights into environmental resistance and its influence on the development of new antiseptic strategies. Viruses, 4(11), pp.3044-3068.
13. Calderwood, A.H., Day, L.W., Muthusamy, V.R., Collins, J., Hambrick, R.D., Brock, A.S., Guda, N.M., Buscaglia, J.M., Petersen, B.T., Buttar, N.S. and Khanna, L.G., 2018. ASGE guideline for infection control during GI endoscopy. Gastrointestinal endoscopy, 87(5), pp.1167-1179.
14. Xiao, F., Tang, M., Zheng, X., Liu, Y., Li, X. and Shan, H., 2020. Evidence for gastrointestinal infection of SARS-CoV-2. Gastroenterology, 158(6), pp.1831-1833.
15. Hamming, I., Timens, W., Bulthuis, M.L.C., Lely, A.T., Navis, G.V. and van Goor, H., 2004. Tissue distribution of ACE2 protein, the functional receptor for SARS coronavirus. A first step in understanding SARS pathogenesis. The Journal of Pathology: A Journal of the Pathological Society of Great Britain and Ireland, 203(2), pp.631-637.
16. Chau, T.N., Lee, K.C., Yao, H., Tsang, T.Y., Chow, T.C., Yeung, Y.C., Choi, K.W., Tso, Y.K., Lau, T., Lai, S.T. and Lai, C.L., 2004. SARS-associated viral hepatitis caused by a novel coronavirus: report of three cases. Hepatology, 39(2), pp.302-310.
17. Su, L., Ma, X., Yu, H., Zhang, Z., Bian, P., Han, Y., Sun, J., Liu, Y., Yang, C., Geng, J. and Zhang, Z., 2020. The different clinical characteristics of corona virus disease cases between children and their families in China–the character of children with COVID-19. Emerging microbes & infections, 9(1), pp.707-713.
18. Kramer, A., Schwebke, I. and Kampf, G., 2006. How long do nosocomial pathogens persist on inanimate surfaces? A systematic review. BMC infectious diseases, 6(1), p.130.
19. Huang, C., Wang, Y., Li, X., Ren, L., Zhao, J., Hu, Y., Zhang, L., Fan, G., Xu, J., Gu, X. and Cheng, Z., 2020. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. The lancet, 395(10223), pp.497-506.
20. Riley, S., Fraser, C., Donnelly, C.A., Ghani, A.C., Abu-Raddad, L.J., Hedley, A.J., Leung, G.M., Ho, L.M., Lam, T.H., Thach, T.Q. and Chau, P., 2003. Transmission dynamics of the etiological agent of SARS in Hong Kong: impact of public health interventions. Science, 300(5627), pp.1961-1966.
21. Yi, Y., Lagniton, P.N., Ye, S., Li, E. and Xu, R.H., 2020. COVID-19: what has been learned and to be learned about the novel coronavirus disease. International journal of biological sciences, 16(10), p.1753.
22. van Deursen, V.M., Damman, K., van der Meer, P., Wijkstra, P.J., Luijckx, G.J., van Beek, A., van Veldhuisen, D.J. and Voors, A.A., 2014. Co-morbidities in heart failure. Heart failure reviews, 19(2), pp.163-172.
23. Zhang, C., Shi, L. and Wang, F.S., 2020. Liver injury in COVID-19: management and challenges. The lancet Gastroenterology & hepatology, 5(5), pp.428-430.
24. Cowling, B.J. and Leung, G.M., 2020. Epidemiological research priorities for public health control of the ongoing global novel coronavirus (2019-nCoV) outbreak. Eurosurveillance, 25(6), p.2000110.
25. Mehta, P., McAuley, D.F., Brown, M., Sanchez, E., Tattersall, R.S., Manson, J.J. and HLH Across Speciality Collaboration, 2020. COVID-19: consider cytokine storm syndromes and immunosuppression. Lancet (London, England), 395(10229), p.1033.
26. Monteleone, G., Sarzi-Puttini, P.C. and Ardizzone, S., 2020. Preventing COVID-19-induced pneumonia with anticytokine therapy. The Lancet Rheumatology, 2(5), pp.e255-e256.

Corresponding author: Mustafa Tareq Shanshool, E-mail: aubdllaalobaidy@gmail.com
Received date: December 18, 2020; **Accepted date:** January 10, 2021; **Published date:** January 30, 2021
Citation: ©2021 Shanshool MT, et al. The Effects of COVID-19 on Some Liver Enzymes Patients At Al Furat General Hospital In Baghdad.