

C-REACTIVE PROTEIN PROGNOSIS DURING COVID 19: SYMPTOMATIC TRANSMISSION AND CLINICAL MANIFESTATION

Abstract

BACKGROUND:C –Reactive Elevation occurs in various disease but, in the case of the corona, it I observed that crp protein was raised and it is raised above the normal value .patient died because of the C-Reactive protein Raised .It is special type of proteinthat is produced by the liver,when thre micro-organism enters the body and the main organ of the body which is liver produces the crp protein in order to fight against the micro organism c reactive protein also increses when the liver is inflamed in chronic jaundice or the patient who is taking alcohol c reactive protein increases not only depends upon the micro organism that is bustered to the body but on the age it depends creactive protein also we can find that it increases with age and normally we can find that with age it increases in the crp protein adult normally have raised crp protein.C reactive is normally is an annular pentameric protein found in yhe blood plasma ,whose circulating concentrartion rise in response to the inflammation. It is an acute phase protein of hepatic origin that increases following interleukin-6 secretion by macrophages and t cells.c reactive protein mainly physiological role is bind to the lysophosphatidycholine expressed on the surface od dead or dying cells in order to activate the complement system.c reactive protein top expressed in right lobe of liver,liver,organ system,islet of Langerhans,gall bladder,duodenum,body of pancrease,multicellular organism,pancrease main function of Crp protein is calcium binding.

[Keywords:Lysophosphatidycholine,CRP protein,T cells,Calcium binding]

INTRODUCTION

The corona virus was there and first case of the corona was there in the year 2002.The corona virus is normally the infection of the lungs in which the corona virus spike protein gets attached to the alveoli in the presence of the proteases enzyme that it is found in the human body.We can calculate the rate of the infection of the corona through the CRP protein which is mainly produced by the liver in the stage of the infection to fight against the virus these crp protein is

necessary to cope with the infections. We are also telling that as the age increases the crp protein value also increases, normally the men has raised crp value. We have calculated the graphs of the crp protein in the mortality patient and in the survival patient. The whitneys methods is also used and we find that the patient who were died due to the corona infection has raised crp protein value in their blood .and we also find that we conducted the cbc test in those patient we find that they had increased neutrophils count in their blood and there also we find that they had increased wbc count and their rbc count were less and their platlets counts were only in the thousands. We also introduced about corona that it takes about 14 days to start its symptoms but normally patients starts shows the symptoms 2-3 days. The virus after inhalation there is consideration that it stays in the throat for 3-4 days and there it produces the copies and then it enters the lungs via respiratory track. so it is always adviced that whenever we feel the symptoms we should drink lots of the hot water so that the virus gets killed or it may get into digested track through the flow of the water. Normally it is adviced that old people needs to drink the lot of the virus and the second things is that one needs to boost the immunity even in the oldage through various fruits eating and various multivitamin tablets or the various antioxidants such as vitamin c as it dicussed in below article. The main introduction of the corona virus is only in the vaccine which is in india there is bharat biotect and the adaar poonawalas company which is producing the vaccine .normally the corona has killed attenuated vaccine. Vaccine such as covaccine sputnik vaccine and covishieldetc are very useful in bringing the immunity in our body. We are also indroduces that how the corona spreads via person to person and its mechanism in the body of the person and mainly in the lungs. Introduction is incomplete when we does not mention about the covid warriors who is working 24 hours in ppe kit and many of them died due to these virus. The hrct rate of the lungs depends if the hrct rate is more and its oxygen cintent is less rhen person needs to beon the ventilator in the severe infection. The HRCT rate is calculated ot of the 25 through the CT SCAN. it is normally the number of the lobes of the lungs infected with these virus and in how many lobes there is fibrosis happens due to the corona virus. We also calculated the HRCT rate in the 298 patient and we find that whose having the HRCT rate more than 20 were prone to death but the HRCT rate below 5 is considered as normal and patient can survived.

METHODS

2.1 STUDY DESIGN

The main world is facing pandemic because of the corona virus and this virus came from famous country china. and the data for covid 19 patients was designated in wuhan hospital of the china. Corona Virus was invented by the chinese people and this come threat to all countries, as the corona infection is increasing day by day. The famous chinese scientist, who were killed by their president they collected the data and analysed from 30 january 2020 to the feb 28 2020. And they find that Crp increases in the patient who has been suffering from the severe Covid 19. All the mens and womens who was suffering from the covid 19. ALL these men amd women has performed the CBC test of the blood and found that they had increases in their CRP protein as they are suffering from the lung infection and in many of the infection it is found that there is increases in crp protein value. All the men and women who was suffering from the corona virus or covid 19 and chinese scientist observed that moderate diagnosis using quantitative RT-PCR, and the famous hospital of the wuhan, china from 1 january to 20 march 2020. The main outcomes was patients who died due to covid 19 has found increase Crp protein. The major aim for the lower the CRP protein is to lower the inflammation of the liver or the lungs so the antiinflammatory tablets are to be used to reduce the infection of the patient. and we can get or we can increase the imunity of the patient so to lower the crp protein value in the covid 19. We can have multivitamins tablets or the vitamin c tablets or the current research found that zinc tablets are proven to lower the infection of the corona patient. some people consumes glutathione which is very powerful antioxidant and the immunity booster is used to treat the corona patient. glutathione tablets not only improves the health but it may improves the liver and main function it detoxify it and it may improves the function of the liver. The liver metabolism is increase by taking the glutathione tablets, as it provides powerful antioxidant and immunity booster and the main glutathione is capable of preventing damage to important cellular components caused by reactive oxygen species such as free radicals, lipid peroxides, and heavy metals which can lower the immunity. now the methods of calculating CRP protein with severe and moderate illness can be easily topographted with various mathematical techniques such as graphs, pie charts and with this various statistical data we can easily compare the things and we can conclude the things on

the bigger picture. The increase of the CRP protein was found an average 20 to 50 mg/L in patient who has been suffering from the corona, and the main 10,11,12,21,22 elevated levels of the crp has been observed upto the 86percent in the severe corona patient. 10,11,12,13 patient with more severe disease. The patient died we feel really sorry for them but these due to chinese people, they all have the tendency to attack on the beautiful world. The logistic regression model was adopted to analyze the association between the disease aggravation and the related factors. The receiver operating curve was utilized to analyze the prognostic value of the cpr protein after the onset of the acute phase response, the serum CRP concentration rises rapidly [within 6-12 hours and peaks at 24-48 hours] and extensively. Concentrations above 100 mg/dl are associated with the severe stimuli such as major trauma and severe infections [sepsis]. C-reactive protein responses may be less pronounced in patients suffering from the liver disease. Elevated crp values are non specific and should not be interpreted without the complete clinical history.[1]

2.2] STATISTICAL ANALYSIS

The SPSS version was taken which is 16.0 [the famous city usa of Chicago] where various laboratories are there where various researchers are there and there are various instruments which are very useful to conduct these experiments. Categorical variables were presented here in the laboratories of the Chicago as median [IQR] and n percent respectively. Mann-Whitney's U test and the student's t test were used in these laboratories of the Chicago to compare the data. The crp value areas under the receiver operating characteristics curve [AUC]. The Youden index calculated the optimal threshold.[2]

MORPHOLOGY

The SARS-COV-2 comprises of the nucleocapsid, surrounded by abundant structural protein, possesses 4 structural proteins [n,s,m,e] 16 non structural proteins and several other accessory proteins. The spike protein gives the shape to the virus. The genome RNA [-30 kb genome] surrounded by the nucleocapsid protein. The envelope is lipoprotein in nature, the lipid part is host derived into which the number of the proteins are embedded such as

SPIKE protein[s]: Helps in the attachment to the target cells. Neutralising antibodies are produced against S protein are protective in nature. It has two subunits. S1 subunit possesses the

receptor necessary [rbd] ,which binds to a specific receptor in congregation compartment surface.S2 subunit facilitates virus cell membrane fusion .membrane glycoprotein [m] it is the most abundant structural protein,gives the shape to the virus.[3]

Covering protein [e]:it is a transmembrane protein and with ion frequency motion,found in the small quantity non structural protein: they include several enzymes which help in replication of the virus ,eg R-N-A dependent polymerase etc.[4]

PATHOGENESIS

TRANSMISSION:

COVID 19 VIRUS IS CHIEFLY SPREAD VIA respirational precepitations and interactions ways.[5]

DRIP SPREAD

TRANSMISSION OF THE DROPLETS WILL be located in nearby interactions within 1 meter through around the person who is suffering from the corona .respiration condensation occurs hypothetically transferable for ,sneezing or very particular communication ,nose or the conjunctiva .use of the cloths mask or the surgical mask can prevent the transmission.[6]

CONTACT TRANSMISSION

Spread of the covid 19 virus can unswervingly by connection with diseased individuals or ramblingly ;

By connection with ther shells in the instantaneous situation or through items used on or by the diseased individual [eg stethoscope or thermometer]or through fomites [inanimate objects] in the insantantaneous atmosphere everywhere the diseased individualsuch as infected clothes respiration is ,utensils,furniture,the virus can be transmitted by touching the persons mouths,nose or eyes.Frequecy hand hygiene following

potential contact exposure is crucial to prevent this type of the transmission.use of n95 respiration to prevent this type of transmission.[7]

AEROSOL TRANSMISSION

Aerosol transmission [spread of the infected droplet nuclei beyond one meter] is not documented yet. However, in specific settings in which aerosol-generating measures be situated achieved eg. Endotracheal intubation], aerosol transmission of the covid 19 virus may be possible. Use of the N 95 IS RECOMMENDED.[8]

PRE SYMPTOMATIC TRANSMISSION-

A person who is suffering from the corona virus is not having any symptoms or does not show any symptoms or he has not established signs and symptoms. This non-symptomatic phase begins from the 1-3 days when the virus gain entry into the body through respiratory track.[9]

Host cell ENTRY

Corona virus enters the body via which track and it targets congregation cells by the spike glycoprotein antigen with the host cell or human body cell receptor which is angiotensin converting enzyme-2. This is receptor for many virus including the corona virus. Now when the virus enters the host cell its spike protein gets cleavage and it breaks down and it happens due to the host cell proteases enzyme found in the human body that is called transmembrane proteases serine. Now the one part of the serine binds to the ACE-2 receptor and S2 subunit which causes synthesis of viral covering with the host cell sheath. Then the virus enters in the alveolar cells in the lungs and on the epithelial cells of the oral mucosa and it corona virus is also found on the cells of the heart, kidney, endothelium and the intestine. That is why patient with the infection of the corona virus extrapulmonary manifestation in addition to the respiratory symptoms.[10]

DEVELOPMENT OF THE ARDS

The leading causes of the mortality in the patient with the corona is mainly the condition hypoxemic respiratory failure which can affect the in severe respiratory agony syndrome.[11]

REDUCED SURFACTANTS

Due to the ACE2 receptors are highly found on the alveolar cells . these cells normally causes or produces the pulmonary surfactant which helps in lowering of the surface tension in the lungs now this ACE2 receptors reduces the surface tension miserably.Now normally in the corona patient there is damage in the there is damage to the type 2 alveolar cells which causes the reduced production of the surfactant and as the surfactant is reduced there is may be alveolar collapse or alverolar shrinklage and it tends to collapse .now to prevent the cpllapse,there is muscular movement of the inspiration becomes the hyperactive,which causes the enlargement of the lungs and volume in the interstitial space.[12]

RISK FACTOR

The chief mainly at high risk are those who is above the 60 years of the age and risk increases with the age because the immunity becomes weaker as the age increases.and many persons who is sufferings from the blood pressure or the diabetes,hyperytension,cardiac arrest chronic obstructive lung disease cerebrovascular disease ,chronic kidney disease,immunosupressent andv the cancer.

CLINICAL MANIFESTATION

When the corona enters the body the person feels normal for 2 days and the person shows the symptoms after 5 days but it can take upto the 14 days .normally first patient wilk see thr sore throat and fever and some what blocked respiratory track due to the mucose in it.[13]other common symptoms include fatigue and the main symptoms include loss of smell and the loss of the taste,myalgia.Loss of the smell occurs on the onset of the respiratory indications .A person who is suffering from the these symptoms should undergoes the corona test as soon as possible.[14]

Atypical symptoms:Particularly seen in the older patient such as fatigue,reduced alertness,reduced mobility,diarrhea ,loss of appetite,absence of the fever.many test are negative and their crp value remains normally in range but they comes positive because the virus has gain the entry and it is in the throat.[15-20]

LABORATRIES DIAGNOSIS

Laboratory diagnosis is necessary only in indications as per the government of india,such as patient with influenza like illness etc.asymotomatic shortest and high risk contacts of a confirmed casesto be established as soon as between day 5 and day 10 of the contact.

RESULTS

TEST was conducted and 298 patients were enrolled ,now out of the 298 84 died due to the corona and 214 recovered. Males were in large quantities these prove that male has stronge immunity .now we collected the blood of those 298 patient both who survived and those who died we find that there is increase in the WBC count and the neutrophil count and we also find that patient who died has more crp protein raised and there is low rbc count and the platlets count.the independent predictors of adverse outcomes are age neutrophils count ,platlet count etc.[21-25]

CONCLUSION

We concluded that the patient who has been suffering from the corona more the crp value more is the mortality rate of the patient and it is based indicator to decide the severity of the patient.

REFERANCES

1. M. Javanian, M. Bayani, M. Shokri et al., “Clinical and laboratory findings from patients with COVID-19 pneumonia in Babol North of Iran: a retrospective cohort study,” *Romanian Journal of Internal Medicine*, vol. 58, no. 3, pp. 161–167, 2020.
2. S. Hsiang, D. Allen, S. Annan-Phan et al., “The effect of large-scale anti-contagion policies on the COVID-19 pandemic,” *Nature*, vol. 584, no. 7820, pp. 262–267, 2020.
3. S. Mas-Coma, M. K. Jones, and A. M. Marty, “COVID-19 and globalization,” *One Health*, vol. 9, 2020.
4. WHO, *Coronavirus Disease (COVID-19)*, WHO, Geneva, Switzerland, 2020, Situation Report.
5. W. Ling, “C-reactive protein levels in the early stage of COVID-19,” *Médecine et Maladies Infectieuses*, vol. 50, pp. 332–334, 2020.

6. X.-W. Xu, X.-X. Wu, X.-G. Jiang et al., "Clinical findings in a group of patients infected with the 2019 novel coronavirus (SARS-Cov-2) outside of Wuhan, China: retrospective case series," *BMJ*, p. 368, 2020.
7. R. H. Khalil and N. Al-Humadi, "Types of acute phase reactants and their importance in vaccination," *Biomedical Reports*, vol. 12, no. 4, pp. 143–152, 2020.
8. E. M. Kamal, M. A. Abd El-Hakeem, A. M. El Sayed, and M. M. Ahmed, "Validity of C-reactive protein and procalcitonin in prediction of bacterial infection in patients with liver cirrhosis," *Minia Journal of Medical Research*, vol. 30, no. 3, pp. 124–132.
9. N. R. Sproston and J. J. Ashworth, "Role of C-reactive protein at sites of inflammation and infection," *Frontiers in Immunology*, vol. 9, p. 754, 2018.
10. T. H. Rainer, C. P. Y. Chan, M. F. Leung et al., "Diagnostic utility of CRP to neopterin ratio in patients with acute respiratory tract infections," *Journal of Infection*, vol. 58, no. 2, pp. 123–130, 2009.
11. D. Gershov, S. Kim, N. Brot, and K. B. Elkon, "C-reactive protein binds to apoptotic cells, protects the cells from assembly of the terminal complement components, and sustains an antiinflammatory innate immune response," *Journal of Experimental Medicine*, vol. 192, no. 9, pp. 1353–1364, 2000.
12. P. Pova, J. Pereira, and L. Coelho, "C-reactive protein: structure, synthesis and function," *C-Reactive Protein: New Research*, 2009.
13. D. Coster, A. Wasserman, E. Fisher et al., "Using the kinetics of C-reactive protein response to improve the differential diagnosis between acute bacterial and viral infections," *Infection*, vol. 48, no. 2, pp. 241–248, 2020. View
14. F. Liu, L. Li, M. Xu et al., "Prognostic value of interleukin-6, C-reactive protein, and procalcitonin in patients with COVID-19," *Journal of Clinical Virology*, vol. 127, Article ID 104370, 2020.

15. C. Qin, L. Zhou, Z. Hu et al., “Dysregulation of immune response in patients with coronavirus 2019 (COVID-19) in wuhan, China,” *Clinical Infectious Diseases*, vol. 71, no. 15, pp. 762–768, 2020.
16. B. R. Sahu, R. K. Kampa, A. Padhi, and A. K. Panda, “C-reactive protein: a promising biomarker for poor prognosis in COVID-19 infection,” *Clinica Chimica Acta*, vol. 509, pp. 91–94, 2020.
17. Y. Deng, W. Liu, k. Liu et al., “Clinical characteristics of fatal and recovered cases of coronavirus disease 2019 in Wuhan, China: a retrospective study,” *Chinese Medical Journal*, vol. 133, no. 11, pp. 1261–1267, 2020. Vi:
18. Acharya, Sourya, Samarth Shukla, and Neema Acharya. “Gospels of a Pandemic- A Metaphysical Commentary on the Current COVID-19 Crisis.” *JOURNAL OF CLINICAL AND DIAGNOSTIC RESEARCH* 14, no. 6 (June 2020): OA01–2. <https://doi.org/10.7860/JCDR/2020/44627.13774>.
19. Arora, Devamsh, Muskan Sharma, Sourya Acharya, Samarth Shukla, and Neema Acharya. “India in ‘Flattening the Curve’ of COVID-19 Pandemic - Triumphs and Challenges Thereof.” *JOURNAL OF EVOLUTION OF MEDICAL AND DENTAL SCIENCES-JEMDS* 9, no. 43 (October 26, 2020): 3252–55. <https://doi.org/10.14260/jemds/2020/713>.
20. Bawiskar, Nipun, Amol Andhale, Vidyashree Hulkoti, Sourya Acharya, and Samarth Shukla. “Haematological Manifestations of Covid-19 and Emerging Immunohaematological Therapeutic Strategies.” *JOURNAL OF EVOLUTION OF MEDICAL AND DENTAL SCIENCES-JEMDS* 9, no. 46 (November 16, 2020): 3489–94. <https://doi.org/10.14260/jemds/2020/763>.
21. Burhani, Tasneem Sajjad, and Waqar M. Naqvi. “Telehealth - A Boon in the Time of COVID 19 Outbreak.” *JOURNAL OF EVOLUTION OF MEDICAL AND DENTAL SCIENCES-JEMDS* 9, no. 29 (July 20, 2020): 2081–84. <https://doi.org/10.14260/jemds/2020/454>.

22. Butola, Lata Kanyal, Ranjit Ambad, Prakash Kesharao Kute, Roshan Kumar Jha, and Amol Dattarao Shinde. "The Pandemic of 21st Century - COVID-19." JOURNAL OF EVOLUTION OF MEDICAL AND DENTAL SCIENCES-JEMDS 9, no. 39 (September 28, 2020): 2913–18. <https://doi.org/10.14260/jemds/2020/637>.
23. Dasari, Venkatesh, and Kiran Dasari. "Nutraceuticals to Support Immunity: COVID-19 Pandemic- A Wake-up Call." JOURNAL OF CLINICAL AND DIAGNOSTIC RESEARCH 14, no. 7 (July 2020): OE05–9. <https://doi.org/10.7860/JCDR/2020/44898.13843>.
24. Dhok, Archana, Lata Kanyal Butola, Ashish Anjankar, Amol Datta Rao Shinde, Prakash Kesharao Kute, and Roshan Kumar Jha. "Role of Vitamins and Minerals in Improving Immunity during Covid-19 Pandemic - A Review." JOURNAL OF EVOLUTION OF MEDICAL AND DENTAL SCIENCES-JEMDS 9, no. 32 (August 10, 2020): 2296–2300. <https://doi.org/10.14260/jemds/2020/497>.
25. Gawai, Jaya Pranoykumar, Seema Singh, Vaishali Deoraaji Taksande, Tessy Sebastian, Pooja Kasturkar, and Ruchira Shrikant Ankar. "Critical Review on Impact of COVID 19 and Mental Health." JOURNAL OF EVOLUTION OF MEDICAL AND DENTAL SCIENCES-JEMDS 9, no. 30 (July 27, 2020): 2158–63. <https://doi.org/10.14260/jemds/2020/470>.