International Journal Dental and Medical Sciences Research
Volume 3, Issue 2,Mar-Apr 2021 pp 157-161 www.ijdmsrjournal.com ISSN: 2582-6018

Semiquantification of Viral load among Covid-19 patients in Central hospital, Ramgarh, Northern India: A retrospective study

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Submitted: 01-03-2021 Revised: 09-03-2021 Accepted: 12-03-2021

ABSTRACT: Background and Aim: The virus that causes coronavirus disease 19 (COVID-19) is a highly transmittable and pathogenic viral infection and mainly transmitted through contact with respiratory droplets rather than through the air, also be transmitted through surface contamination when these droplets land on eyes, nose or mouth of the person.[1,2,3]

The aim of our study was to find out the trends of viral load and symptoms among Covid-19 patients in central hospital Ramgarh**. Materials and Methods:** This study was carried inCorona Testing Lab, Department of Pathology, Central Hospital, Ramgarh, Jharkhand. This was a retrospective study. A total of 500 patients were screened with or without symptoms for corona testing by Trueprep AUTO (Based on PCR consisting detection of Beta Cov for screening and SARS-Cov-2 for confirmation) and data wereanalyzed with respect to viral load and symptoms of the patients.

Results: Out of 500 patients screened for Covid-19 infections, 149 patients were positive for Beta Cov. while 129 patients were positive for SARS-CoV-2. Among Covid-19 infected patients,mosthad low to very low viral load and fever was the most common symptomfollowed by cough and cold in our study.

Conclusions: Among Covid-19 infected SARS-COV-2 positive patients, most had low to very low viral load . Symptomatic patients had high viral load. Fever was the most common symptom followed cough and cold. As most of the patients are asymptomatic in our study, screening is important tool to prevent and break the spread of Covid-19 among community.

Key words: Covid-19, Trueprep AUTO, Symptoms, viral load

I. INTRODUCTION

The virus is typically rapidly spread from one person to another via respiratory droplets produced during coughing and sneezing. It is considered most contagious when people are symptomatic, although transmission may be possible before symptoms show in patients. Time from exposure and symptom onset is generally between two and 14 days, with an average of five days. Common symptoms include fever, cough, sneezing and shortness of breath. Complications may include pneumonia, throat pain and acute respiratory distress syndrome. Recommended preventive measures include washinghands with soap, covering the mouth when coughing, maintaining 1-meter distance from other people and monitoring and self-isolation for fourteen days for people who suspect they are infected.[4]The standard tool of diagnosis is by reverse transcription polymerase chain reaction (rRT-PCR) from a throat swab or nasopharyngeal swab. The infection can also be diagnosed from a combination of symptoms, risk factors and a chest CT scan showing features of pneumonia.[5]

II. MATERIALS AND METHODS:

Specimen collection and preparation

Oropharyngeal or nasopharyngeal swab specimen was collected by using standard nylon flocked swab.

Principle of the test

Real Time Reverse Transcription Polymerase chain Reaction based on Taqman chemistry.

Sample storage and Transportation

Transport medium for swab Specimen decontaminates the specimen and makes it ready for storage/ transportation/extraction. The specimen

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is stable for upto 3 days for 40 degree Centigrade and one week for 30 degree Centigrade.

Limitations of the test

The test requires appropriate specimen collection, handling, storage and transportation.

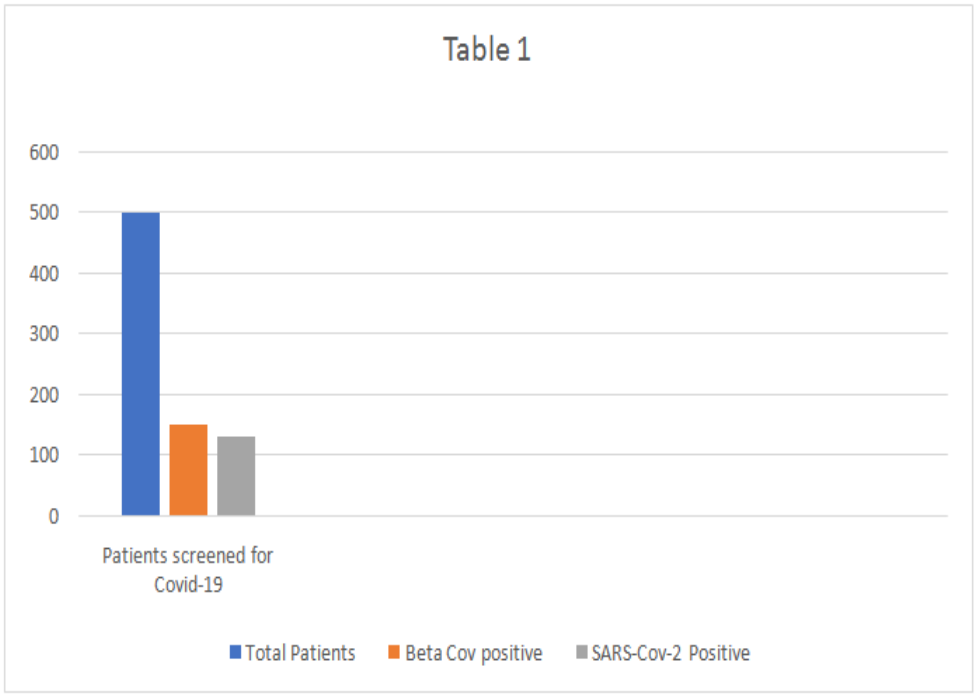
III. RESULTS

A total of 500 patients were screened for Covid-19 infection during the study period in which 149 patients were tested positive for Beta Cov (Screening) while 129 patients were tested positive for SARS-Cov-2 (Confirmatory) as shown in [Table 1]

Out of 149 patients were positive during screening, 60 patients had very low viral load, 45 patientshad low, 14 patients had medium and 30 patients had very high viral loadas shown in [Table-2]

Among 149 Beta Cov positive patients,129 patients were also found positive for SARS-Cov-2 as shown in [Table-3]

Among 129confirmatory Covid-19 positive patients, most are asymptomatic. The most common symptom was fever which constitute 35% whichfollowed by cold and coughwhich constitute 16% as shown in [Table-4]



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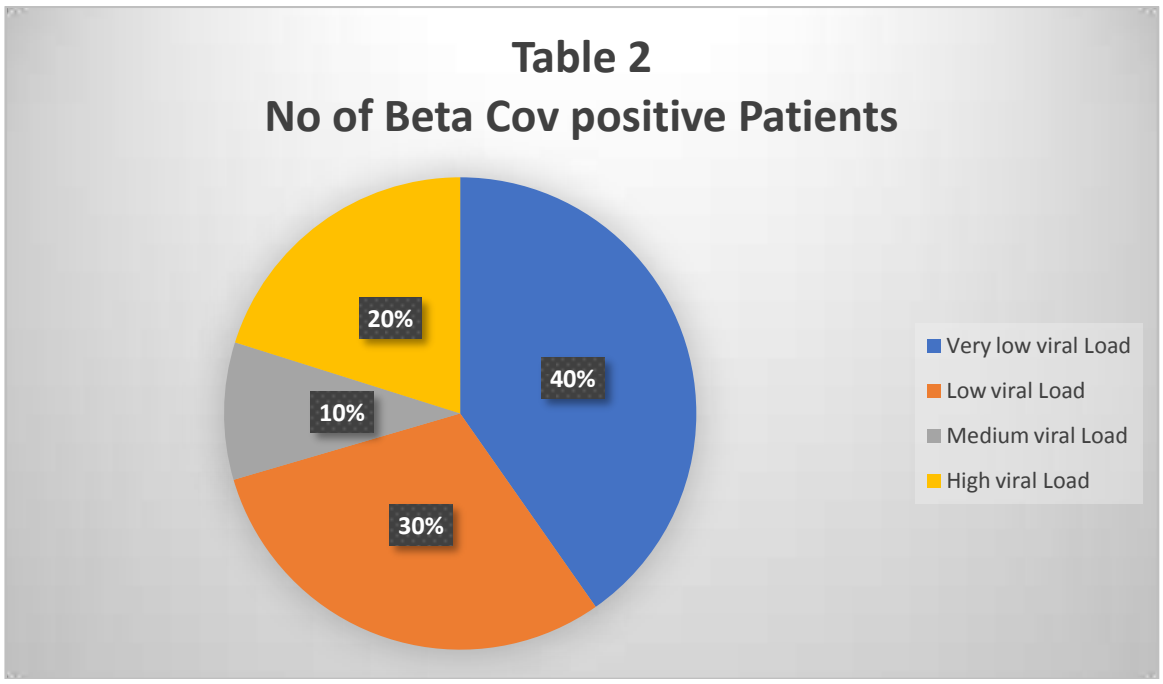

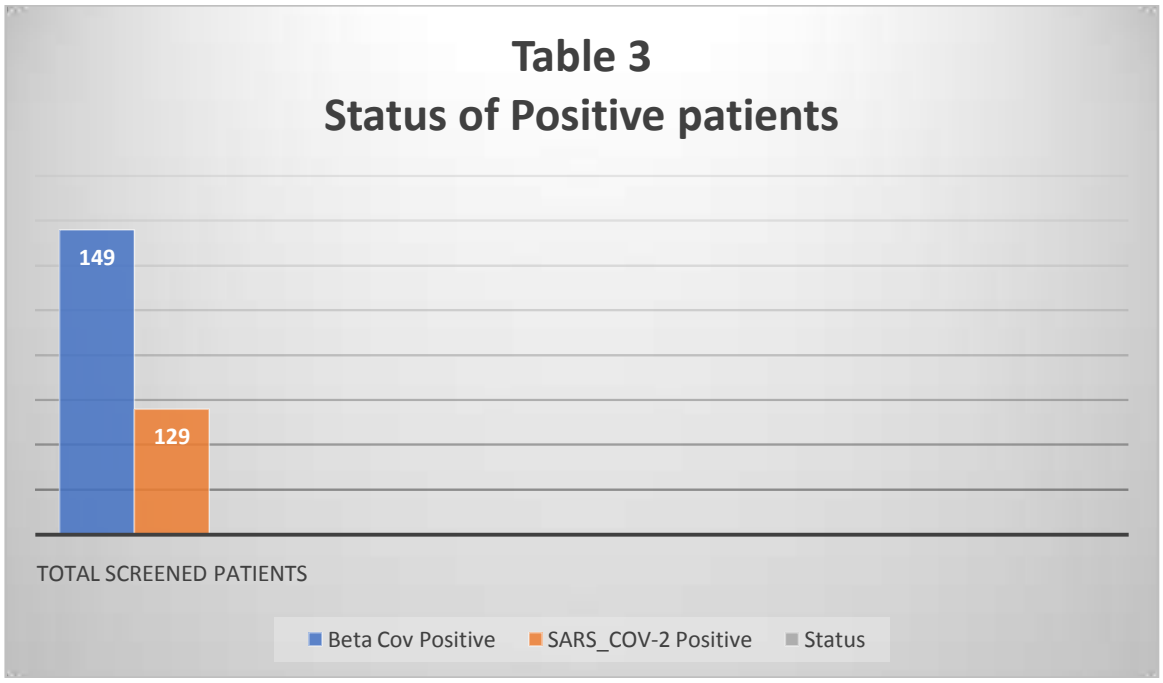

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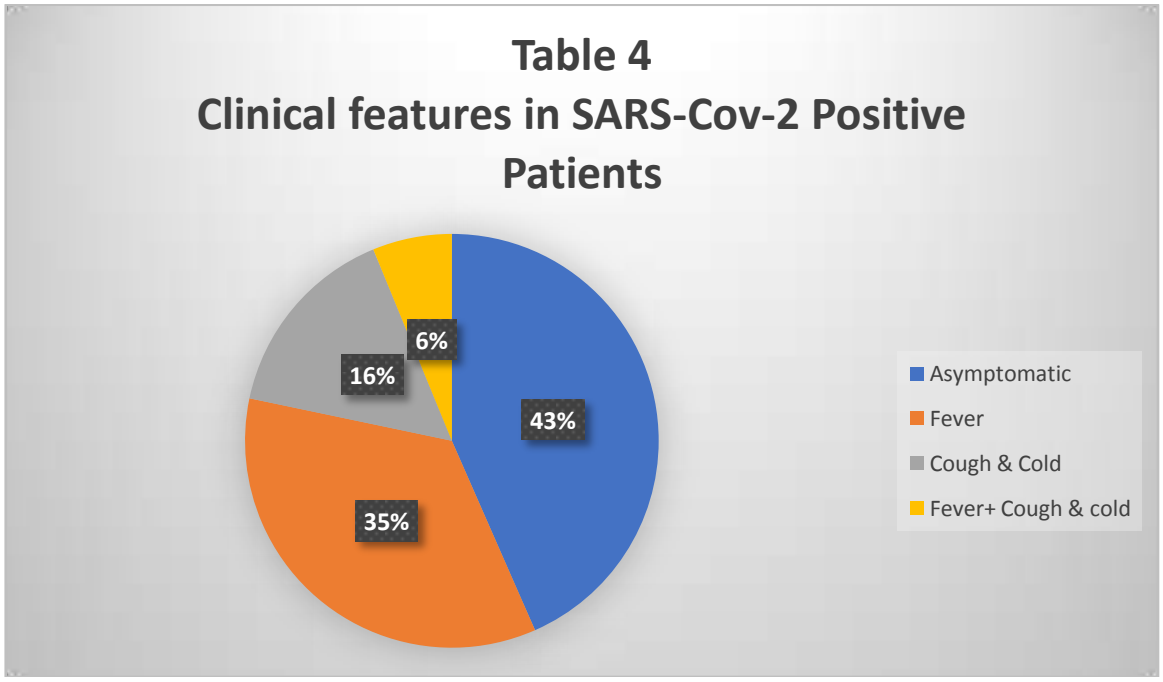

IV. DISCUSSION

Study done by Zou L et al suggested that the viral load at the time of initial sample collection was significantly higher in symptomatic than in asymptomatic patients.[6]

Study suggested that a high nasopharyngeal viral load may contribute to the secondary transmission of COVID-19. Although RT-qPCR does no distinguish between infectious virus and noninfectious nucleic acid. [7]

Study done by Rodriguez-Morales AJ et al[8] suggested that individuals with asymptomatic infections were also suspected of potentially transmitting infections, which further add to the complexity of disease transmission dynamics in COVID-19 infections.

Study done by Atkinson B et al[9] suggested that there were no relation between viral load and the infectiousness of COVID-19.

Several studies suggested little or no difference in viral load among pre-symptomatic or asymptomatic patients and symptomatic patients.[10,11,12,13,14,15,16]

Study done by Bendix A[17] of nearly 140 patients at the Zhongnan Hospital of Wuhan University identified different types of symptom, the most common symptom was fever with extremely high temperature followed by fatigue and dry cough among Covid-19 infected patients. One-third of the patient developed a dry cough and difficulty in breathing.

Study done by Lupia T et al[18] and Yang Y et al[19], the main symptoms are reported is fever followed by cough.

In our study, most of the symptomatic patients had high viral load while SARS-Cov-2 positive patients mostly had low to very low viral load. Among Covid-19 patients, most of the patients were asymptomatic while fever was most common symptom followed by cough and cold.

V. CONCLUSION

Among Covid-19 infected SARS-COV-2 positive patients, most had low to very low viral load . Symptomatic patients had high viral load. Fever was the most common symptom followed cough and cold. As most of the patients are asymptomatic in our study, screening is important tool to prevent and break the spread of Covid-19 among community.

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