Original Research Paper

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Microbiology

ASSESSING THE DISEASE SEVERITY IN PATIENTS WITH COVID19 BY COMPARING CYCLE THRESHOLD VALUE OF RTPCR AND SEVERITY SCORE OF CHEST CT SCAN IN A TERITIARY CARE HOSPITAL

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KEYWORDS :

INTRODUCTION-

Sars CoV-2 a novel strain of coronavirus was first detected in december 2019 in wuhan city of china.The virus has spread globally and was characterized as pandemic by WHO.Combination of several diagnostic methods not only improve early detection of the disease but also useful in assessing the disease severity.Vast number of pneumonia cases has occurred in patients who were infected with Sars CoV-2.However the clinical expression of the disease is extreamely variable in patients with RTPCR confirmed positive.It has been ranged from asymtomatic to ARDS(AcuteRespiratoryDistressSyndrome). According to WHO the preferred method for detection and confirmation of COVID19 cases is RTPCR by taking Naso Pharyngeal Swab(NPS) or Oropharyngeal swab of the person.On the other hand chest Computed tomography(CT) is being used as routine for diagnosing SarsCoV-2 as it is relatively easy to perform and for fast diagnosis.

AIM –

The study is aimed to evaluate significance of Ct value (cycle threshold) value of RTPCR with chest CT SCAN (computed Tomography scan)in covid19 patients in assessing the severity of the disease.

MATERIALS AND METHODS –

Data regarding the patients who came to the hospital and admitted in the covid wards was collected from radiology department and microbiology department of Kurnool General Hospital.Patients below 25 yrs of age were excluded from this study.

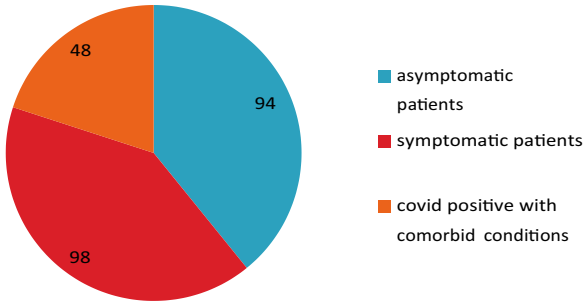
Viral RNA was extracted from NPS by using Qiagen viral RNA extraction kit.The RTPCR tests were performed with Allplex seegene nCoV assay kit using primers and probes targeting the RdRp gene,N gene and E gene.The thermal cycling condition was 20 min at 50^0C for reverse transcripton,15 min at 95^0C for PCR initial activation and 45 cycles of 15 sec at 94^0C and 30sec at 55^0C,according to manufacture's instructions.A Ct value of <35 was considered as a positive result. Cycle threshold(Ct) value below 24 is low Ct,25-30 is moderate Ct, 30-35 is high Ct.High Ct Value indicates low viral load and low Ct value indicates high viral load.

Chest CT of RTPCR positive patients was evaluated in a period from 21/07/20 to 31/07/20.CT Chest examination was performed within 1-10 days of PCR assays. CT severity sore is ranged from 0-25, 1-8 is mild,9-15 is moderate & 16-25 is severe.

RESULTS -

Out of 240 covid positive patients,94(39.1%) were out patients who were asymptomatic,98 (40.8%) were admitted in covid wards with symptoms& 48(20%) patients were admitted in covid ICU with comorbid conditions and breathlessness.The viral load was significantly high in out patients(i,e RTPCR ct value is low)with no findings on chest CT scan.Among 48 patients in covid ICU wards 19(7.9%)patients were died and in remaining 29 patients,the CT severity score is from moderate to severe(i,e9-25) with high Ct value(i,e low viral load) and the CT severity score was mild to moderate(1-15) in patients admitted in covid wards with high Ct value of RTPCR.

Results - out of 240 covid positive patients



CONCLUSION

The most important finding in this study was the inverse relation of viral load and chest CT severity score.Although the viral load of SarsCoV-2 in NPS is high ,it is not necessarily related to changes in chest CT.It may be speculated that the high viral load in NPS may be in the early phase of the disease while in later phase the chest CT changes become detectable.It is suggested that RTPCR is significant in early detection of the disease even in patients who are asymptomatic by which we can decrease the spread of the diasease,where as CT severity score is useful for admission of the patient in the hospital which may decrease the mortality rate.By this study we can say that viral load i,e ct value of RTPCR is not significant in assessing the severity of infection.

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