ORIGINAL RESEARCH PAPER

Pathology

STUDY OF LABORATORY PARAMETERS , RADIOLOGICAL FINDING AND CLINICAL OUTCOME IN DIAGNOSED CASES OF COVID-19 AT TERTIARY CARE TEACHING HOSPITAL

KEY WORDS:

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INTRODUCTION

- Coronavirus is an enveloped single stranded RNA virus . SARS COV-2 is Responsible for coronavirus disease 2019 (covid-19)
- On 11 march 2020 , covid -19 was declared as global pandemic disease. The first covid-19 case was reported from Wuhan,China in dec. 2019. The first case of covid-19 india reported 30 jan.2020 in kerala.
- Covid-19 is primarily manifested as a Respiratory tract infection ,emerging data indicate that it should be regarded as systemic disease involving multiple systems including cardiovascular ,respiratory, gastrointestinal and immune systems . SARS covid-2 is approx 80% the same as SARS COV Mortality rates of covid -19 are lower than SARS . However, covid-19 is more lethal than seasonal flu . Older people and those with co-morbidities are at increased risk of death from covid-19 patients .

The coronavirus disease 2019 (COVID-19) pandemic has rapidly spread to many countries around the world and is still spreading due to newer variants The study suggested that CBC, LDH , SGPT,S. FERRITIN, CRP, D-DIMER are important factors for ICU in covid-19 patients . Therefore it is crucial to evaluate **factors affecting the clinical outcome of covid-19 patients .**

In CBC, WBC differential to moniter for outcome and signs of disease progression. All biological marker are beneficial for risk stratification and hyperinflammation in covid 19 patients.

So the study of laboratory parameter, radiological finding correlation with clinical outcome is good clue for early prognosis in future

AIM AND OBJECTIVES
Aim
- TO STUDY LABORATORY PARAMETERS ,HRCT SCORE AND CLINICAL OUTCOME IN DIAGNOSED CASES OF COVID-19 AT TERTIARY CARE TEACHING HOSPITAL

Objectives of the Study
- To estimate laboratory parameters in covid-19 patients.
- To estimate HRCT score in covid-19 patients.
- To find out clinical outcomes in covid-19 patients.

MATERIAL AND METHOD
- The data were taken from 500 patients of RT-PCR OR RAPID ANTIGEN TEST confirmed covid-19 cases admitted at C. U. Shah Medical College and Hospital, between January2020 and June 2022 were included in the study.

Tools of Measurement
- **For CBC**: Coulter LH750 analyzer(beckman coulter) and Unicel DXH800 (coulter analysis system),
- **For Biochemical** : Siemens, Cobas e411, turbodyne SC
- **For HRCT score** : Siemens (SOMATOM Emotion)
- **For clinical outcome**: Clinical case paper

RESULTS
- Our population case study included 500 patients who were confirmed diagnosis to have COVID-19 infection by Rapid antigen test **(RAT)** and Reverse transcriptase-polymerase chain reaction **(RT-PCR)** test.
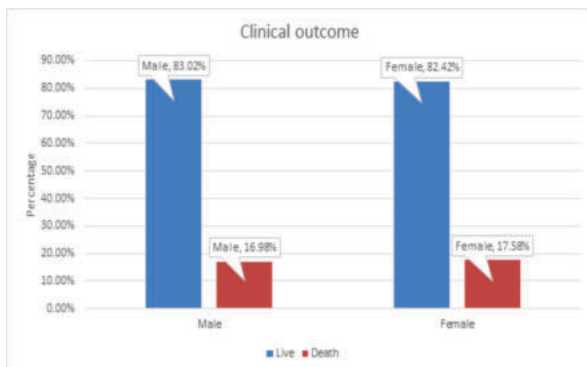- 500 patients were included with the following information been collected: age, gender, laboratory tests including CBC,SGPT, CRP, D-dimer, LDH ,Ferritin levels, HRCT score and final clinical outcome (alive or expired)
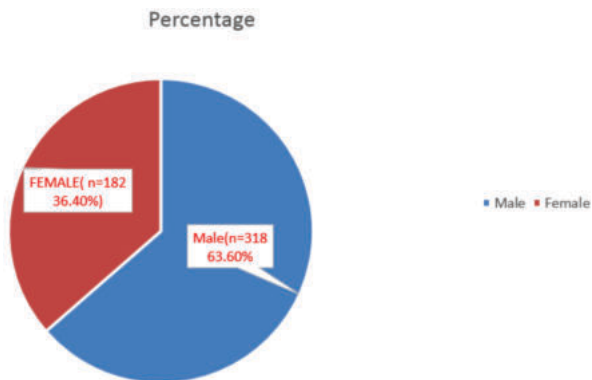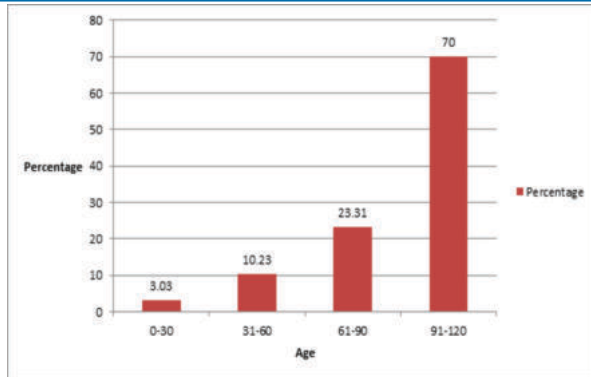

Out of the 500 patients, male are 318(63.80%) and females 182(36.40%)
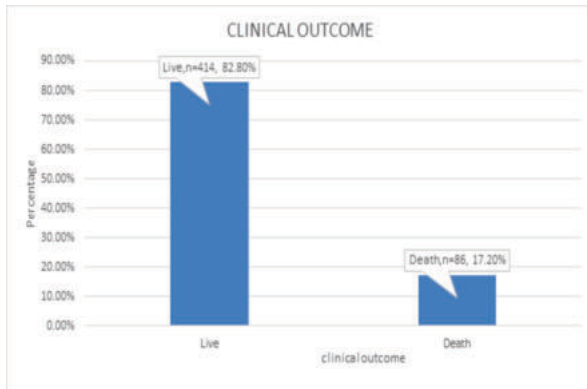
Out of the 500 patients clinical out come , live 414(82.80%) and death 86(17.20%)

Out of the 318 male, 264(83.02%)live and 54(16.98%)death and 182 females,150(82.42%) live and 32(17.58%) death

In our study seen, increase the age have increase the death. Highest death(70%) is seen in 91 to120 yr age group in our study.

• In our **500 case** study Laboratory results showed

Elevated **N:L Ratio(normal value 0.78-3.53)** in 380 patients (76%)and normal in 120(24%),

Elevated **CRP (normal value<5 mg/ L)** in 394 patients (78.8%) and normal in 106(21.2%),

High **D-dimer (normal value<500)** in 299(59.8%) and normal in 201(40.2%),

Elevated **S.Ferritin level (normal value23.9-336.2 ng/mL)** in 230 (46%) ,normal in 259(51.8%) and decrease in 11(2.2%)
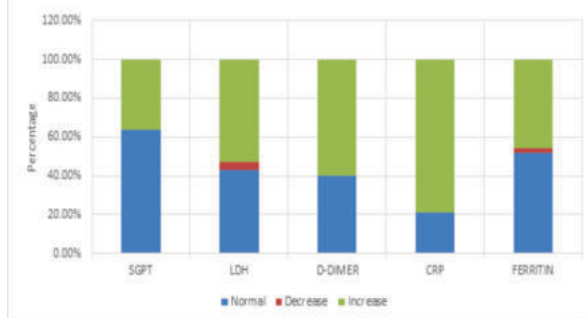
Elevated **SGPT(normal value 14-59 U/L)** in 180 patients (36%),normal in 318(63.6%) and decrease in 2(0.2%)

Elevated **LDH(normal value 230-460 U/L)** in 263 patients (52.6%),normal in 215(43%) and decrease in 22(4.4%)
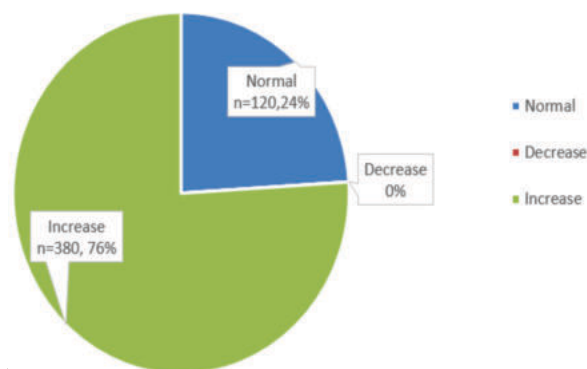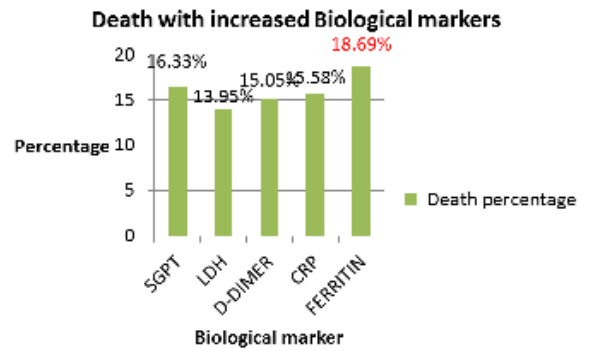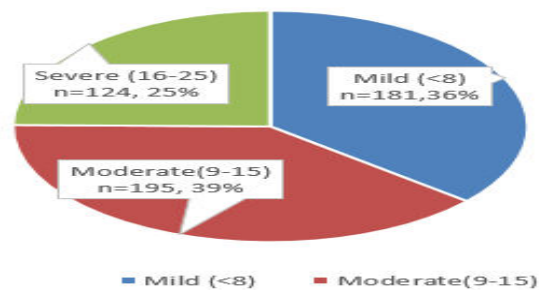
Serum ferritin level was closely linked to the severity of the disease. In our study shows in increase biological marker, highest death (18.69%) seen in high S.ferritin level patients.

Correlation between HRCT score and Clinical outcome:
• In mild score(<8): live180(43.8%) and death 01(1.16%)
• In moderate score(9-15): live193(46.62%) and death 02(2.32%)
• In sever score(16-25): live41(9.90%) and death 83(96.51%)

DISCUSSION
• The use of chest imaging HRCT scan and laboratory parameter as part of diagnostic workup of COVID-19 disease whenever RT-PCR testing is not available, in case of delayed test results or when there is a clinical suspicion of COVID-19 with initial negative RT-PCR testing.
• CT severity score is positively correlated with clinical outcome in our study which is in accordance to study done by Ghufran Aref Saeed et al ,Waqar Gaba and Asad Shah
• Our results showed that the N:L ratio and serum CRP level had good significant indicator.
• In our study, elevated N:L Ratio in (76%) and normal in (24%) and Ghufran Aref Saeed et al study elevated (77.50%) and normal (22.50%).
• In our study, elevated CRP in (78.8%) and normal in (21.20%) and Ghufran Aref Saeed et al study elevated (40.30%) and normal (59.70%).
• Similarly, serum ferritin level was closely linked to the severity of the disease which is seen in Ghufran Aref Saeed et al studies.
• In our study, elevated serum ferritin in (46%) and Ghufran Aref Saeed et al study elevated (33.3%)
• Our results showed that the HRCT severity score had significant correlation with clinical outcome. High severity score have high death (96.51%) which was compared high death (23%) to study done by Ghufran Aref Saeed et al and Agarwal, et al

CONCLUSION
• Laboratory parameter and CT scans can pivotal role in assisting physicians in the management plan and work as an indicator for disease severity and possible outcome.

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