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An Observational Study to To Find Impact of Covid 19 Infection on Causation and Prognosis of Pancreatitis in A Tertiary Care Center

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Abstract :
Objective: To find impact of covid 19 infection on causation and prognosis of pancreatitis
Design: Prospective observational study
Setting: A large, academic, tertiary medical center
Methodology:Clinical and laboratory data of all consecutive patients with a primary diagnosis of AP during past 6months with history of covid 19 infection was collected .Clinical and radiological grading was taken into consideration for finding severity.
Results:out of 30 patient 4 patients had severe covid 19 infection requiring more than 10days of hostilization but though 1 of those 4patient developed recurrent pancreatitis but severity score was less(clinical and radiological).14 had mild covid 19 infection with minimal respiratory and more of GI symptoms .Out of these 14 ,10 developed severe acute necrotizing pancreatitis requiring ICU stay and prolonged hospital stay .12 patients had mild covid 19 infection with respiratory symptoms .10 of them had pancreatitis of mild severity ,2 developed severe necrotizing pancreatitis.
Interpretation and conclusion: Based on our study we conclude that more than severe covid 19infection mild covid 19infection with GI symptoms has a greater impact on the prognosis of patient with pancreatitis.However there is still insufficient evidence showing that covid 19 can cause AP or negatively impact prognosis.Additional major studies are needed to clarify relationship between these two entities

Keywords:Acute pancreatitis,Gastrointestinal symptoms, coronavirus disease 2019

Introduction

Gastrointestinal symptoms are highly prevalent in coronavirus disease ranging from 17.6 % to 53%.The proposed mechanism for GI symptoms involves SARS-COV2 virus binding to the host epithelial cell's ACE 2 receptor,commonly found in GI tract epithelial cells.

After defeating covid to an extent there is now an interest in understanding post covid sequele .“Acute pancreatitis” is usually a self-limiting disease; however, severe form of the disease developed in 25 % of patients & it is associated with a mortality of up to 50 %. Available Scoring system’s aim is to stratify the severity of the AP, and this in turn guides the management with improving outcomes.

In this study we are tried understand if there was any impact of covid 19 infection on causation or prognosis of pancreatitis .

PATHOGENESIS OF ACUTE PANCREATITI

The initial phase is characterized by intra pancreatic digestive enzyme activation and acinar cell injury. Trypsin activation appears to be mediated by lysosomal hydrolases such as cathepsin B that become colocalized with digestive enzymes in intracellular organelles; it is currently believed that acinar cell injury is the consequence of trypsin activation.

The second phase of pancreatitis involves the activation, chemo attraction and sequestration of leukocytes and macrophages in the pancreas resulting in an enhanced intrapancreatic inflammatory reaction. Neutrophil depletion induced by prior administration of an ant neutrophil serum has been shown to reduce the severity of experimentally induced pancreatitis. There is also evidence to support the concept that neutrophils can activate trypsinogen.

Materials And Methods:

Source of data:

All patients diagnosed with acute pancreatitis who are hospitalised to the intensive care unit at the Sapthagiri Institute of Medical Sciences and Research Centre will be included.

A. Study design: Prospective Observational study
B. B. Study period: 18 months February 2021 to August 2022
C. Place of study: Research Facility of the Sapthagiri Institute of Medical Sciences.
D. Sample Size : 30

E. Inclusion criteria :

- Patients with acute pancreatitis
- Prior history of covid 19 infection
- People who are willing to provide informed consent

F. Exclusion Criteria:

- Chronic pancreatitis patient
- Patient with on going covid 19 infection
- Immunocompromised patients

G. Methodology:

Clinical and laboratory data of all consecutive patients with a primary diagnosis of AP during past 6months with history of covid 19 infection was collected .Clinical and radiological grading was taken into consideration for finding severity.

SEVERITY OF ACUTE PANCREATITIS

Mild, Moderate1y severe, and severe

MILD ACUTE PANCREATITIS

- Without local complications or organ failure.
- Mostly associated with interstitia1 acute pancreatitis
- the disease is self-limited and subsides spontaneously

MODERATELY SEVERE ACUTE PANCREATITIS

- Transient organ failure (resolves in <48 h) or local or systemic complications in the absence of persistent organ failure.
- These patients may or may not have necrosis
- may develop local complication such as a fluid collection that requires a prolonged hospitalization greater than 1 week

SEVERE ACUTE PANCREATITIS

- Characterized by persistent organ failure (>48 h).
- Organ failure can be single or multiple

Risk Factors for Severity

- Age >60 years
- Obesity
- BMI >30
- comorbid disease (Charlson comorbidity Index)

Markers of Severity at Admission or Within 24 hrs.

- SIRS defined by presence of 2 or more criteria
- Core temperature $<36^0$ or $>38^0$ C
- Heart rate >90 beats/mt
- Respirations >20/min or Pco2 <32 mmHg
- White blood cell count > 12000/micL or <4000/micL or 10% bands
- APACHE II
- Hemoconcentration (hematocrit >44%)
- Admission BUN (>22 mg/dL)
- BISAP 5core

(B) BUN >25 mg/dL
(I) impaired mental status
(S) SIRS > 2 of 4 present
(A) Age >60 years
(P) Pleural effusion

- Organ failure (Modified Marshall 5core)
- Cardiovascular: systolic BP <90 mmHg, heart rate > 130 beats/min. Pulmonary: Pao2 <60 mmHg Renal: serum creatinine >2.0 mg%

Markers of Severity during Hospitalization

- Persistent organ failure

- Pancreatic necrosis

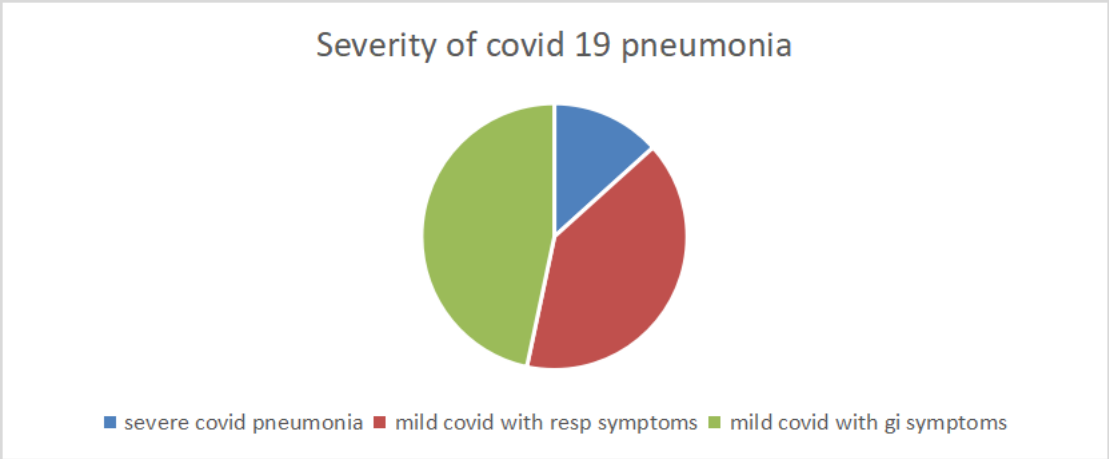
STATISTICAL ANALYSIS:

Using SPSS V.20 for analysis, the obtained data will be entered into Microsoft Excel. The result will be expressed in the form of descriptive and inherently statistics.

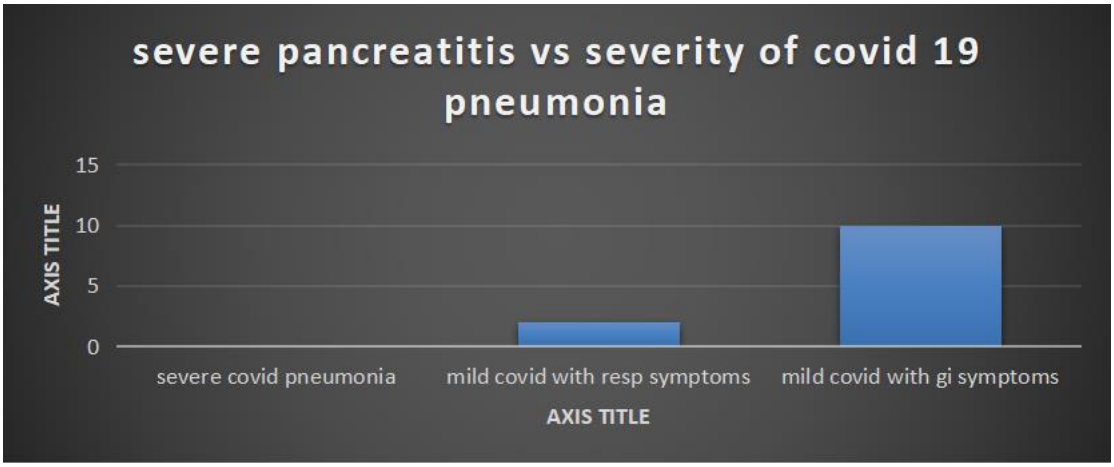
If $p < 0.05$, it is said to be statistically significant

Results:

out of 30 patient 4 patients had severe covid 19 infection requiring more than 10days of hostilization but though 1 of those 4patient developed recurrent pancreatitis but severity score was less(clinical and radiological).



12 patients had mild covid 19 infection with respiratory symptoms .10 of them had pancreatitis of mild severity ,2 developed severe necrotizing pancreatitis.



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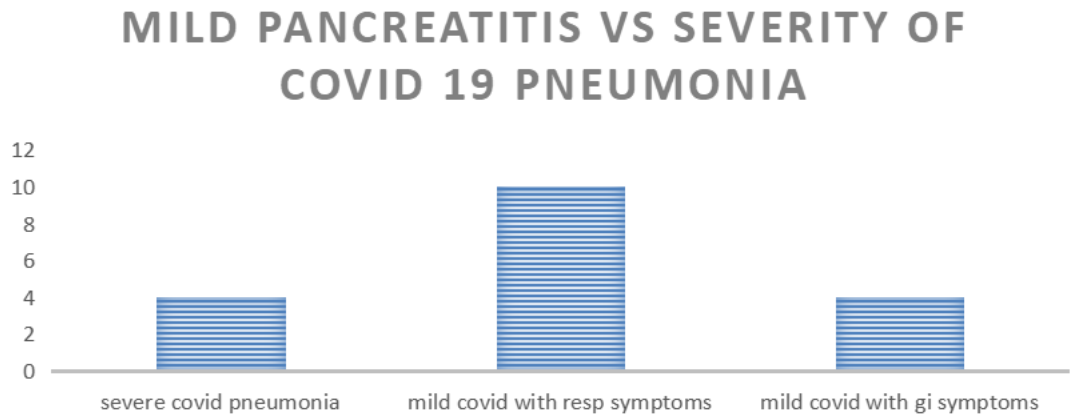

Discussion:

Acute pancreatitis as a manifestation of COVID-19 infection has been reported in isolated case reports and case series, however, a large, national study has yet to be published

One theory for pancreatitis development is through the binding of ACE2 receptors, which are present in pancreatic ductal, acinar, and islet cells

Inamdar et al. describe an increase in the incidence of AP due to un-identified causes in COVID-19 positive patients compared to COVID-19 negative patients, implicating Sars-CoV-2 to be a possible causative agent

Our study is not without limitations but our study does emphasis on need for larger studies to prove correlation of covid 19 infection and Acute pancreatitis.

Our studdy gives an idea on correlation of severity of pancreatitis and severity of covid 19 infection.

Conclusion :

Despite the trend in recent literature of trying to establish or refute the role of SARS-CoV-2 in AP cases, currently, there is no sufficient evidence showing that COVID-19 can cause AP or negatively impact prognosis. Adherence to AP guidelines, namely diagnosis and etiological work-up, and careful monitoring of patients are of utmost importance to ensure the most adequate orientation and avoid convenience diagnosis.Based on our study we conclude that more than severe covid 19infection mild covid 19infection with GI symptoms has a greater impact on the prognosis of patient with pancreatitis. However there is still insufficient evidence showing that covid 19 can cause AP or negatively impact prognosis.Additional major studies are needed to clarify relationship between these two entities

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