



## COVID-19 AND ACUTE CALCULOUS CHOLECYSTITIS – A CASE REPORT

### General Surgery

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### ABSTRACT

With the declaration of the COVID Pandemic by the WHO in March, 2020, there has been changes in view of surgical management of diseases. While a Laparoscopic Cholecystectomy continues to be the treatment of choice for a case of Acute Calculous Cholecystitis, there is not enough evidence in terms of the benefits in performing the same immediately in older individuals also suffering from COVID19. Conservative Management of the symptoms followed by interval cholecystectomy has been an approach followed for the treatment of older individuals who also suffer from COVID19 with considerable lung involvement.

### KEYWORDS

COVID19 Pneumonia; Acute Calculous Cholecystitis; Conservative Management; Interval Cholecystectomy

### INTRODUCTION

With its inception in Wuhan, China in December 2019, the SARS Cov2 causing COVID 19 went on to be declared as a Global Pandemic by the WHO in March 2020. Though the most common system to be affected by the virus was the Respiratory system with symptoms of Fever, Malaise, Cough and Cold, Diarrhea, there has been increasing evidence of the Atypical presentations of the Virus involving other organ systems like the Gastrointestinal, Nervous system etc. [2]

Here, is a case of a man diagnosed with Moderate COVID pneumonia [3] along with Acute Calculous Cholecystitis diagnosed during his hospital admission and suffering from other comorbidities like Diabetes Mellitus, Chronic hypertension and COPD.

### CASE REPORT

A 76 year old Male presented to the outpatient department with 8 day history of Fever, Malaise, Dyspnea on Exertion, Cough with Expectoration and Cold. The Temperature was above 100F, Cough with Expectoration, without diurnal variation causing distress at night. He complained of Malaise and Weakness while performing daily activities which was gradual in onset and progressively worsening. He had no history of contact with a positive case of COVID19 and had no history of travel.

The patient was a known case of Diabetes Mellitus Type 2, Hypertension and Chronic Obstructive Pulmonary Disorder, well controlled on medication.

On examination he was afebrile, Saturation – 98% on Room Air, BP-140/98 mm Hg, Pulse-88/min and Respiratory Rate-18 breaths/min.

The patient was then admitted as a case of suspected COVID-19 in view of comorbidities and old age. The patient tested positive for COVID19 by the RT-PCR method.[4]

An array of laboratory investigations were ordered and were as follows: CBC – Hemoglobin – 12.5g/dl , WBC count – 13100 cells/mm<sup>3</sup> ( neutrophils – 76cells / mm<sup>3</sup> ,Platelet count – 113 x 10<sup>3</sup>/microliter. Initial LFT showed total serum bilirubin – 0.6mg/dl, SGPT – 39 Units/L, SGOT – 34 Units/L, ALP – 49 IU/L

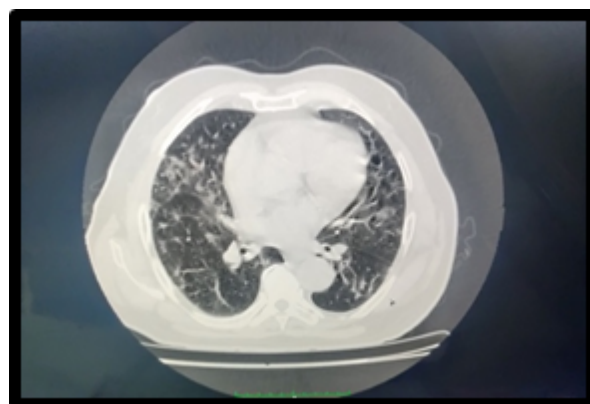
He was then started on the standard protocol for treatment of COVID 19 infection which included Hydroxychloroquine, Ivermectin, Tetracycline, Vitamin C and Multivitamins. [5]

The patient was maintaining saturation between 97-99% on Room Air when on day 8 of admission he started desaturating and required oxygen support. He was then started on 8 litres of oxygen via non-rebreather mask and was maintaining saturation between 94-97%. Chest Xray showed consolidation and CT scan of the lung was

performed which showed Bilateral lung involvement with multiple Ground Glass Opacities congruent with COVID pneumonia, CT score 10/25, CORAD 6. [6] He was accordingly started on Injection Remdesivir for moderate COVID pneumonia.[7]



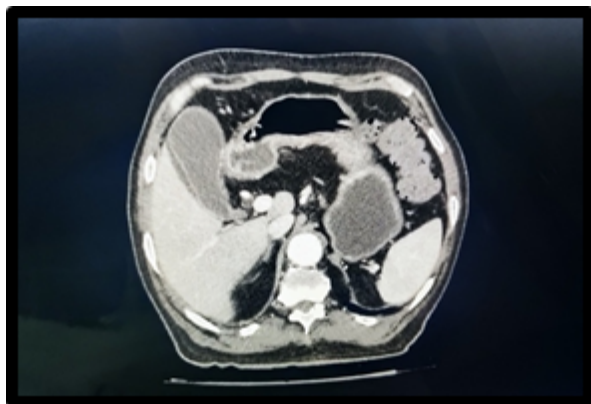
**Fig 1. Chest X ray showing patches of consolidation in line with COVID 19 Pneumonia**



**Fig 2. HRCT Lung showing Multiple Ground Glass Opacities suggestive of COVID19 Pneumonia**

On Day 8 of admission, he also started complaining of Dull Aching Right Upper Quadrant and Epigastric Pain and Severe Nausea and Vomiting (2 episodes) along with Decreased Appetite. On examination he had Rebound Tenderness, Guarding and Rigidity in the Right Upper Quadrant and Murphy's sign was elicited. A repeat LFT was ordered

showing Raised Serum Bilirubin – 1.2 mg/dl, Conjugated Bilirubin – 0.3mg/dl, SGPT – 65 U/L and SGOT-49 U/L, ALP – 41 IU/L. CT scan – abdomen and pelvis were performed, which showed Inflamed Gall Bladder Wall with Overdistended Gall Bladder with Calculi. A diagnosis of Acute Calculous Cholecystitis (ACC) was made. [8]



**Fig 3. Showing CT – Plain – Abdomen with Overdistended Gall bladder with an inflamed wall and a calculous.**

Conservative management was chosen to treat the same with a Third Generation Cephalosporin and Supportive Care. [9] Anti-Spasmodics were started for pain management and the patient showed considerable respite. A Ryle's Tube was inserted and the patient was kept Nil By Mouth. He was clinically observed for any signs of Increasing Body Temperature, Worsening Tenderness and Tachycardia. A close watch was kept on the progression of the COVID19 Pneumonia by monitoring Oxygen Saturation, Increased Demand for Oxygen and signs of Respiratory Distress and Tachypnea. A repeat CBC was then ordered on Day 13 which showed Hemoglobin – 12.5g/dl, WBC count – 6100cells/mm<sup>3</sup>, Platelet Count – 113x10<sup>3</sup> cells.

Patient showed response to treatment and gradually there was a decrease in the oxygen requirement. By day 21 of admission the patient had started maintaining saturation of 96-98% on Room Air and was discharged with a negative swab on day 27. Patient was advised to follow up in 6 weeks with a repeat Ultrasound – Abdomen and Pelvis for a Laparoscopic Cholecystectomy.

## DISCUSSION

The SARS- Cov2 was originally known to affect the Respiratory System primarily with symptoms ranging from Fever, Cold, Cough to Complications like Acute Respiratory Distress Syndrome. Further development on the knowledge of the virus led to the discovery of its effects on other Organ Systems. There is notable evidence that the ACE2 receptor present in the lung as well as the liver is the receptor of choice for inhabitation by the SARS Cov2 Virus. The virus causes direct harm to the cells to the cells of the bile duct due to high concentration of ACE2 receptors by causing cytolysis leading to mild transaminase elevation [10]. There isn't enough evidence to suggest the exact pathogenesis of acute cholecystitis in COVID 19 and whether it is a manifestation or a complication of the same.

The gold standard therapy for ACC is Laparoscopic Cholecystectomy [11] but when in March 2020, the WHO declared that COVID-19 infection officially as a global pandemic, it led to several restrictions in terms of surgical management of patients with various ailments irrespective of their COVID19 diagnosis. With increasing spread and severity of infection it became all the more difficult to perform elective surgery, as would have been the case in pre- COVID times.

More over the morbidity and mortality caused by the virus in the elderly population is more severe compared to their much younger counterparts. By taking into consideration the Pneumonia Severity Index, Imaging results, Laboratory results and symptoms into consideration it was found that risk of COVID19 infecting adult men with chronic comorbidities is higher due to their weaker immune function.[12] Further Amodeo et al said that a significant reduction in TNF- $\alpha$ , IL-2, IFN- $\gamma$  and lymphoproliferation is observed immediately after surgery, indicating impaired cell-mediated immunity. TNF- $\alpha$  and IFN- $\gamma$  remained suppressed up to 48 hours after surgery, while IL2 and lymphoproliferation becomes normal eventually.[13] These mediators

are an essential part of the body's immune response to the virus. [3] Even though old age is not a contraindication to surgical intervention, [14] there is currently very little evidence in the outcome of surgery in an active case of COVID19 pneumonia.

## CONCLUSION

As evidenced by the case above, conservative management of the pain with Anti-Spasmodics and infection with Antibiotics avoided complications of ACC in the patient.[9] Furthermore regular follow ups will be required to assess the need of surgical intervention in the future. COVID19 causes increased mortality and morbidity in the elderly and to avoid further complication a less invasive treatment of choice was chosen.[15] Surgical management of the same can be done in the form of an Interval Laparoscopic Cholecystectomy once the patient has recovered from the COVID19 infection decreasing the morbidity and giving a better outcome. [16]

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