

Endoscopic retrograde cholangiopancreatography for acute gallstone pancreatitis: Implementation of an institution safety protocol during the COVID-19 outbreak in Malaysia

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SUMMARY

Coronavirus disease 2019 (COVID-19) is a highly contagious, severe acute respiratory syndrome that poses significant health risks to healthcare providers. A delicate balance is needed between timely intervention for ill patients without apparent COVID-19 infection and the safety of healthcare personnel who provide essential treatment in the midst of the pandemic. We report our experience managing a 70-year-old man who presented with acute gallstone pancreatitis at our hospital during the COVID-19 outbreak in Malaysia. We also describe the safety protocol measures that have been implemented in our institution to protect the healthcare personnel from this disease during endoscopic retrograde cholangiopancreatography. This case illustrates the importance of meticulous planning, risk assessment, effective team communication and strict adherence to recommendations when providing treatment during an unprecedented pandemic.

INTRODUCTION

Coronavirus disease 2019 (COVID-19) is a highly contagious respiratory disease that is caused by an infection with coronavirus 2 (SARS-CoV-2) causing severe acute respiratory syndrome.¹ In Malaysia, the first case of COVID-19 was detected in January 2020, and the number of cases has grown exponentially. In March, the country recorded the highest number of COVID-19 cases among all South-East Asian nations, and as of Aug 4, 9002 cumulative cases of COVID-19 have been diagnosed, with 125 fatalities.²

Healthcare personnel who provide care to patients with confirmed or suspected COVID-19 infection are highly vulnerable, considering that the virus spreads primarily through aerosol droplets.³ Procedures at high risk for spreading infection include endoscopy, which is an aerosol-generating procedure (AGP).³ In this report, we share our experience of performing semi-urgent endoscopic retrograde cholangiopancreatography (ERCP) for a patient with acute gallstone pancreatitis during the COVID-19 outbreak and the preventative measures implemented to protect healthcare personnel from transmission of the virus. Written consent was obtained from the patient for this report.

CASE REPORT

A 70-year-old man with ischaemic heart disease was admitted to Universiti Teknologi MARA Hospital in late March 2020 with severe epigastric pain that radiated to the back, since 1 week previously. The pain was associated with fever, nausea and vomiting; however, there was no dyspnoea, anorexia, weight loss, or recent alcohol consumption. The patient reported no allergy or previous surgery. Physical examination revealed a body mass index of 21 kg/m², scleral icterus and abdominal tenderness when palpated in the right upper quadrant region.

The laboratory tests showed leucocytosis (15×10³/μL), hyperbilirubinemia (116 μmol/L), elevated alkaline phosphatase (334 U/L) and high amylase (1089 U/L). The levels of cardiac enzymes were normal, and there was no pneumoperitoneum on the erect chest radiograph. Computed tomography (CT) revealed multiple stones in the gallbladder and distal common bile duct (CBD) that caused biliary obstruction. Hence, a diagnosis of acute gallstone pancreatitis with presumed cholangitis was established.

Intravenous cefoperazone (1 g twice a day) was initiated, and semi-urgent ERCP was planned. On the following day, the patient provided informed consent, underwent a rapid antibody IgM/IgG test for COVID-19, and was transferred to the operating theatre. Only the following medical staff members were allowed during the procedure: an anaesthesiologist, two assistant anaesthesiologists, a surgeon/endoscopist, two gastrointestinal assistants, a circulating nurse and a radiographer. All the personnel wore personal protective equipment (PPE), including face shields, special respirator or N95 respirators, surgical gowns over isolation gowns, head and neck covers, double gloves and boot covers (Fig. 1).

Before the induction of general anaesthesia, the patient was attached to standard intraoperative monitoring. The patient was placed in the supine position with an acrylic box over the head, preoxygenated with 100% oxygen with no manual bag-mask ventilation (Fig. 2). Rapid sequence induction and intubation were performed with fentanyl (2 ug/kg), propofol (2 mg/kg) and rocuronium (1 mg/kg) without cricoid



Fig. 1: An example of a staff member in full personal protective equipment before the procedure.

pressure. We employed a video-assisted laryngoscope to assist intubation. The endotracheal tube cuff was inflated and directly connected to the breathing circuit.

We performed ERCP with a double-wire cannulation technique because selective biliary cannulation failed after two attempts. Following pancreatic duct cannulation, we inserted a straight 7-Fr stent into the duct. Next, we achieved biliary cannulation using a sphincterotome and a guide wire. The CBD was confirmed with a contrast injection, with two small distal stones identified using a portable radiographic unit. We performed endoscopic sphincterotomy to enable stone extraction via balloon. Throughout the procedure, the vital signs of the patient were continuously monitored by the anaesthetist. After completing ERCP, we placed the scope and its accessories in a special decontamination container. The surgeon and his team exited the theatre while observing strict doffing steps. The PPE was removed in a step-wise manner,



Fig. 2: Endotracheal intubation done inside the aerosol headbox by the anaesthetist.

and each step was accompanied by regular hand washing using alcohol-based hand disinfectant. Reversal of anaesthetic agents was given, and the patient was extubated. The subsequent recovery of the patient was uneventful, and he was discharged home 3 days later.

DISCUSSION

Acute gallstone pancreatitis is caused by the reflux of bile and duodenal content into the pancreatic duct due to transient obstruction of the ampulla of Vater during the passage of gallstones.⁴ Early ERCP and biliary decompression is more beneficial than conservative management when the pancreatitis is associated with cholangitis, as in the present case.⁵ More importantly, this case highlights several risk assessment steps taken during ERCP in the current unprecedented pandemic because any patient could potentially be a disease carrier. Given that the patient was from the state with the highest incidence of COVID-19 in Malaysia, risk stratification strategies such as screening history, COVID-19 testing and alteration to our regular ERCP practice were conducted before treatment initiation.⁶ The medical history of the patient must be reviewed for any symptoms typical of COVID-19. Particular attention should be paid to epidemiological risk factors (e.g. history of recent travel to countries with active cases and close contact with a person under investigation for COVID-19). A nasopharyngeal swab is performed for mandatory COVID-19 testing of all patients requiring surgery or AGPs.⁶

ERCP is frequently performed in an endoscopy suite with the patient in a prone position under sedation, in our centre. However, in this particular case, the operating theatre was chosen to take advantage of the laminar flow ventilation to minimise the number of infectious organisms. The supine position facilitates general anaesthesia induction with endotracheal intubation given that the anaesthetist would be at high risk of contracting COVID-19 from aerosolised droplets. The following specific measures were implemented to minimise the risk of airborne transmission via aerosolisation: the inclusion of an experienced anaesthetist, the donning of high-level full PPE with a respirator, the non-implementation of manual bag-mask ventilation, the use of an aerosol headbox and the use of video-assisted laryngoscopy to reduce the distance between the operator and the airway during intubation of the patient.⁷ An

intravenous injection of lignocaine helps reduce coughing. At the end of the anaesthesia, only the anaesthetist and her assistant were available for tracheal extubation that was performed as per the guidelines during the COVID-19 pandemic.⁸

The preparation and execution of the procedure for this case took longer (due to the screening, COVID-19 testing, general anaesthesia, donning and doffing of PPE and decontamination) than that for standard ERCP. However, these steps are crucial for preventing potential infections. Although one may argue that we have acted overly cautious for a low-risk COVID-19 infection, approximately 87.9 % of asymptomatic individuals can be positive for SARS-CoV-2 on screening,⁹ demonstrating the importance of routine COVID-19 testing before the performance of an AGP.

CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

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REFERENCES

1. Lai CC, Shih TP, Ko WC, Tang HJ, Hsueh PR. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and coronavirus disease-2019 (COVID-19): the epidemic and the challenges. *Int J Antimicrob Agents* 2020; 105924.
2. Malaysia Ministry of Health. Press statement updates on the coronavirus disease (COVID-19) situation in Malaysia 2020 [cited Aug 2020]. Available from: <http://covid-19.moh.gov.my>
3. World Health Organization. Rational use of personal protective equipment for coronavirus disease (COVID-19): interim guidance, February 27 2020. Available from: <https://apps.who.int/iris/handle/10665/331215>
4. Acosta JM, Pellegrini CA, Skinner DB. Etiology and pathogenesis of acute biliary pancreatitis. *Surgery* 1980; 88: 118-25.
5. Tse F, Yuan Y. Early routine endoscopic retrograde cholangiopancreatography strategy versus early conservative management strategy in acute gallstone pancreatitis. *Cochrane Database Syst Rev* 2012: CD009779.
6. Malaysia Ministry of Health. Guidelines on the management of Coronavirus Disease 2019 (COVID-19) in Surgery 2020 [cited Aug 2020]. Available from: <https://www.moh.gov.my/moh/resources>
7. Wong WY, Kong YC, See JJ, Kan RKC, Lim MPP, Chen Q, et al. Anaesthetic management of patients with COVID-19: infection prevention and control measures in the operating theatre. *Br J Anaesth* 2020; 125(2): e239-41.
8. World Federation of Society of Anaesthesiologist. Coronavirus—guidance for anaesthesia and perioperative provider. 2020 [cited Aug 2020]. Available from: <https://www.wfsahq.org/resources/coronavirus>
9. Sutton D, Fuchs K, D'Alton M, Goffman D. Universal screening for SARS-CoV-2 in women admitted for delivery. *N Engl J Med* 2020; 382(22): 2163-4.