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COVID-19 infection in patients following hepato-pancreatico-biliary intervention: An early experience



The risk to patients undergoing cancer surgery during the coronavirus disease (COVID-19) pandemic is not known. COVID-19 is highly contagious and can progress to Acute Respiratory Distress Syndrome/multi-organ dysfunction and mortality. We report our experience of 3 patients developing COVID-19 infection after hepato-pancreatico-biliary intervention in March 2020 during the initial outbreak in the United Kingdom.

Pre-intervention all patients reported no history of recent foreign travel, contact with symptomatic people or symptoms of COVID-19 infection. No pre-intervention SARS-CoV-2 viral swabs were taken. The patient characteristics are summarised in [Table 1](#). All patients were discharged following 2 negative COVID-19 swabs.

Patient 1 received neoadjuvant FOLFIRINOX chemotherapy for a borderline resectable ampullary adenocarcinoma followed by a pylorus preserving pancreaticoduodenectomy with partial superior mesenteric vein resection. CXR on POD2 demonstrated basal atelectasis only. On POD6 the patient developed a new cough and fever and was diagnosed with COVID-19. CXR on POD6 revealed worsening bilateral lower lobe and retrocardiac atelectasis with right sided pleural fluid. The patient did not require re-intubation and was managed with oxygen therapy. The patient was discharged on POD 25. Histopathological diagnosis was pT3aN0 ampullary adenocarcinoma (PN10, V0, R0).

Patient 2 had metachronous liver metastases and received FOLFIRI based chemotherapy followed by surgery as shown in [Table 1](#). Intra-operatively a positive end-expiratory pressure of 8 cmH₂O was required and end tidal CO₂ was 7 mmHg at the end of surgery. Post-operatively the patient was febrile with thick white sputum noted in the endotracheal tube. Initial post-operative CXR was normal but the patient remained intubated, spiking temperatures with high FiO₂ and noradrenaline requirements and a COVID-19 diagnosis was confirmed. On POD 5 he developed an acute kidney injury and CXR demonstrated right lower collapse with right basal

atelectasis. The patient was extubated on POD 10 with gradual improvement in respiratory function and was discharged on POD 18. Histopathological diagnosis was three liver lesions with moderately differentiated adenocarcinoma (PN10, V0, R0).

Patient 3 had previously undergone right hemi-hepatectomy, caudate lobectomy, extrahepatic bile duct resection with hepaticojejunostomy for a hilar stricture secondary to primary biliary sclerosis. The patient developed a hepaticojejunostomy stricture and underwent elective biliary drainage and balloon dilatation. There were no complications post-procedure and the patient remained well with reducing serum bilirubin levels. On POD11 the patient developed a dry cough and fever with no abnormalities observed on CXR. On POD 13, the patient was found to be COVID-19 positive although no systemic compromise was noted. Repeat cholangiogram demonstrated satisfactory biliary flow and the drain was removed. The patient was discharged on POD24.

COVID-19 infection presents the surgical community with an unprecedented challenge. Whilst the available data is limited, COVID-19 infection will increase morbidity and mortality following cancer surgery [1]. *Hou et al.* reported that in a tertiary hospital in Wuhan the highest proportion of patient with confirmed COVID-19 pneumonia had undergone gastrointestinal and thoracic operations [2]. In patients with COVID-19 infection alone the mortality rate is reported between 1 and 3% [3]. All 3 cases at our center were noted over a short time interval during the initial pandemic in the UK. It is likely that patient 2 had asymptomatic COVID-19 infection pre-operatively, whilst patients 1 and 3 developed COVID-19 infection after intervention. Thus pre-operative symptoms cannot be relied upon to accurately predict those patients with COVID-19 infection. There was no patient mortality in our series unlike a recent reported case series from Iran where 2 of 4 infected patients died after surgery [1].

This case series strongly supports the routine testing of patients and clinical staff to reduce the potential complications of surgery on patients with COVID-19. The debate as to the optimal method of

Table 1

Characteristics of patients who underwent hepatico-pancreatico-biliary intervention.

	Gender	Age	BMI	Intervention	COVID-19 Diagnosis	Length of stay (days)
Patient 1	Male	54	27	Pylorus preserving pancreaticoduodenectomy	POD 6	25
Patient 2	Male	62	38	Caudate lobectomy, non-anatomic resection of segment 6 and 8 liver metastases	POD 2	18
Patient 3	Male	79	29	Biliary drainage and balloon dilatation of hepaticojejunostomy	POD 13	24

BMI: Body mass index.

POD: Post-operative day.

Abbreviations: COVID-19, (novel coronavirus 2019); POD, (post-operative day); CXR, (Chest x-ray).

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testing continues but in our institution, we have now adopted routine patient isolation for 7 days before surgery, pre-operative COVID-19 testing and CT thorax within 24 hours of surgery for high risk patients.

Whilst all 3 patients were clinically stable on discharge, the risk of adverse outcomes in patients particularly after major abdominal surgery in the COVID-19 era is very real and requires vigilance. Routine comprehensive testing of patients and healthcare staff is necessary to allow major cancer surgery to be performed safely in the COVID-19 era.

Declaration of competing interest

Nothing to report.

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