Demographics and characteristics of endoscopic findings among COVID-19 patients with upper gastrointestinal bleeding in a single centre

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ABSTRACT

Introduction: Novel coronavirus 19 disease (COVID-19) pandemic poses healthcare providers challenges in the endoscopic suite. It is unclear whether it affects the endoscopic manifestations of upper gastrointestinal (GI) bleeding. This retrospective study was done to review demographic data, site of lesions and need of interventions for those lesions.

Materials and Methods: Oesophagoduodenoscopy (OGDS) reports of COVID-19 patients with indication of upper GI bleeding from March 2021 to April 2022 were reviewed. Data of 35 patients were then analysed.

Results: Of the 35 patients, 8.6% (n = 3) were female and 91.4% (n = 32) were males. A total of 31.4% (n = 11) were below 50 years and 68.6% (n = 24) were 50 and above. 34.3% (n = 12) with lesions requiring endoscopic intervention, 34.3% (n = 12) with lesions not requiring endoscopic intervention, 31.4% (n = 11) has no significant stigmata of recent haemorrhage. Among subgroup requiring endoscopic intervention, 50% (n = 6) are non-variceal bleeding (NVUIB), and 50% (n = 6) are variceal bleeding (VUGIB). Among NVUGIB, 16.7% (n = 1) is gastric and duodenal angiodysplasia requiring argon plasma coagulation, 50% (n = 3) are duodenal F2A ulcer requiring thermoablation, 16.7% (n = 1) is gastric F2A ulcer requiring hemoclip, and 16.6% (n = 1) is Cameron's ulcer requiring hemoclip. Among VUGIB, 100% (n = 6) are oesophageal varices requiring endoscopic variceal banding (EVL).

Conclusions: Lower proportion of NVUGIB among COVID-19 patients raises hypothesis on whether prothrombotic state of COVID-19 is a protective factor of NVUGIB. Studies with larger sample size are needed to establish significance.

KEYWORDS:
COVID-19; upper gastrointestinal bleeding; endoscopic findings

INTRODUCTION

The novel coronavirus 19 disease (COVID-19) was initially described to have started at the Wuhan province, China in December 2019.[1] What initially started as a national problem quickly evolved into a global pandemic which still has dire consequences till now.[2] The COVID-19 disease causes a range of symptoms. From being asymptomatic till it causes fever, diarrhoea, anosmia, myalgia, arthralgia till causing multiorgan failure and death.[3] The COVID-19 too has been described to cause a variety of gastrointestinal (GI) symptoms. Recent evidence suggests that COVID-19 patients have an increased risk to develop venous thromboembolism disorders.[4,6] Hence, thromboprophylaxis may be needed in these patients to prevent it. This in turn causes a variety of side effects especially in terms of upper gastrointestinal bleeding (UGIB). A proportion of patients with a severe course of COVID-19 disease are also exposed to stress ulcers which in turn can also cause UGIB.

Routinely UGIB including non-variceal upper gastrointestinal bleeding (NVUGIB) and variceal upper gastrointestinal bleeding (VUGIB) are managed endoscopically after stabilisation within 24 hours, as suggested by the recent European Society of Gastrointestinal Endoscopy (ESGE) guidelines.[11] However in these patients especially with the ill COVID-19 patients, the risk of cardiopulmonary complications needs to be addressed too. Thus, proper resuscitation, stabilisation and timing of endoscopy are crucial for these patients.

The aim of this study is to review demographic data, site of the UGIB lesions and need for intervention in those lesions in Hospital Kuala Lumpur (HKL) which is the national tertiary centre for Malaysia. To date, this would be the first study to assess UGIB in COVID-19 patients in HKL.

MATERIALS AND METHODS

Oesophagoduodenoscopy (OGDS) reports of COVID-19 patients with indication of UGIB from March 2021 to April 2022 were reviewed. Data of 35 patients were then analysed. These indications include signs and symptoms of overt UGIB such as malaena, haematemesis, significant drop in haemoglobin (>2g/dl), presence of blood or coffee ground in the Ryles tube aspirate. Patients who were confirmed to have COVID -9 disease either by a nasopharyngeal swab polymerase chain reaction (PCR) or rapid test kit-antigen (RTK-Ag) were then included in this study. These patients were then scoped within Day 1 to Day 7 of the COVID-19 illness. The OGDS were performed either in the endoscopy

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Table I: Forrest classification for gastroduodenal ulcers

Stage	Characteristics
Ia	Spurting haemorrhage
Ib	Oozing haemorrhage
IIa	Visible vessel
IIb	Adherent clot
IIc	Black spot in ulcer crater
III	Clean base ulcer

Table II: Demographic characteristics of patients with COVID-19 and UGIB

Variables	Number	Percentage
Gender		
Male	32	91.4%
Female	3	8.6%
Age		
Below 50	11	31.4%
50 and above	24	68.6%
SRH		
Needing intervention	12	34.3%
Not needing intervention	12	34.3%
No SRH	11	31.4%

UGIB-upper gastrointestinal bleeding; SRH-stigmata of recent haemorrhage

Table III: UGIB requiring intervention

Variables	Number	Percentage
Bleeder requiring intervention (n = 12)		
NVUGIB	6	50%
VUGIB	6	50%
NVUGIB (n = 6)		
Angiodysplasia needing argon plasma coagulation	1	16.7%
Duodenal ulcer needing thermoablation	3	50%
Gastric ulcer needing hemoclip	1	16.7%
Cameron's ulcer needing hemoclip	1	16.6%
VUGIB (n = 6)		
OV needing banding	6	100%

UGIB-upper gastrointestinal bleeding; NVUGIB-non-variceal upper gastrointestinal bleeding; VUGIB- variceal upper gastrointestinal bleeding; OV-oesophageal varices

suite or at bedside OGDS. The exclusion criteria were patients younger than 18 years of age, pregnant or moribound from terminal course of COVID-19 patients and those with lower gastrointestinal bleeding (LGIB) were excluded from this study.

If needed, the upper GI endoscopy was then performed by experienced endoscopist with a standby endoscopy team available 24 hours. The endoscopy team wore proper personal protective equipment (PPE) during the endoscopic procedure. The endoscopic findings of NVUGIB were then classified according to Forrest classification for gastroduodenal ulcers. Forrest classifications are detailed in Table I.

Gastroduodenal ulcers with active bleeding (Forrest Ia, Ib, IIa) and active oesophageal variceal bleeding (active or recent stigmata of recent haemorrhage) were dealt with endoscopically. All the bleeding episodes were endoscopically managed requiring no further radiological or surgical intervention.

Patients demographic characteristics (gender, age below or above 50), non-variceal or variceal UGIB were then characterized. The findings were then analysed using SPSS version 10.0. This research was registered in accordance with National Medical Research Register Malaysia RSCH ID-22-05756-W7L.

RESULTS

There was a total of 35 patients with a positive COVID-19 test (confirmed either by a positive nasopharyngeal swab PCR or a positive saliva test) during the study period in HKL who manifested UGIB signs and symptoms (Table II). All of these patients were inpatients. Signs and symptoms include malaenic stools, haematemesis, coffee ground aspirate and significant drop in haemoglobin (>2g/dL).

Of the 35 patients, 8.6% (n = 3) were female and 91.4% (n = 32) were males. 31.4% (n = 11) were below 50 years and 68.6% (n = 24) were 50 and above. Upper GI endoscopy was performed after proper resuscitation and stabilization within 24 hours period from time of referral.

A total of 34.3% (n = 12) with lesions requiring endoscopic intervention, 34.3% (n = 12) with lesions not requiring endoscopic intervention, 31.4% (n = 11) has no significant stigmata of recent haemorrhage. Among subgroup requiring endoscopic intervention, 50% (n = 6) were non variceal bleeding (NVUGIH), and 50% (n = 6) were variceal bleeding (VUGIH). Among NVUGIH, 16.7% (n = 1) is gastric and duodenal angiodysplasia requiring argon plasma coagulation, 50% (n = 3) were duodenal F2a ulcer requiring thermoablation, 16.7% (n = 1) is gastric F2a ulcer requiring hemoclip, and 16.6% (n = 1) is Cameron's ulcer requiring hemoclip (Table III). Among VUGIH, 100% (n = 6) were oesophageal varices requiring banding. All of these patients had successful endoscopic haemostasis.

DISCUSSION

Our study is a retrospective descriptive study showing the characteristics of endoscopic findings in COVID-19 patients with UGIB. COVID-19, which is still an ongoing global pandemic has had devastating outcomes both in a health and economic perspective. Millions were infected globally with the corona virus and thousands more had passed away.[2] To date, there are an over of 4 million COVID-19 cases in Malaysia. COVID-19 can cause a variety of signs and symptoms involving the respiratory system, venous thromboembolism and also manifesting as gastrointestinal manifestations.[3] Among these manifestations include diarrhoea, enterocolitis and gastrointestinal bleeding. COVID-19 patients who are admitted as inpatients are considered high risk groups and tend to deteriorate further.[4] In these patients, thromboembolism is a recognised risk factors for upper GI bleeding. In our retrospective study, we did not have any data in regard to the oral anticoagulants or thromboprophylaxis the patients received.

COVID-19 patients can exhibit a variety of coagulation abnormalities. These include hypercoagulability, thrombosis risk and bleeding risk.[4] Hypercoagulability remains the more common complication in COVID-19 as compared to bleeding.[4]

Hypercoagulable state is a recognized association with COVID-19.[4] The degree of hypercoagulability depends on the systemic inflammatory response which the patient mounts. Fibrinogen and D-dimer may be increased. Prothrombin time (PT) and activated partial thromboplastin time (aPTT) may be prolonged5. These patients may also exhibit a positive lupus anticoagulant (LA).[5] Pathogenesis of these abnormalities are to be yet to known.

Thrombosis risk is another complication of COVID-19. One of it would be venous thromboembolism (VTE). VTE risk was in the range of 5 to 10% in ICU patients and <5% in hospitalised patients.[6] Risks include stroke, myocardial infarction and pulmonary embolism.

Bleeding does happen in COVID-19 patient though not as common as the above complications.[7] Incidences may vary especially in patients who are already on anticoagulation or thromboprophylaxis. Patients on anticoagulation either for venous thromboembolism might be on novel oral anticoagulants such as rivaroxaban and oral warfarin.8 Thromboprophylaxis treatment include enoxaparin sodium (Clexane) or subcutaneous heparin which in turn can have a higher risk of bleeding. Another postulation for bleeding would include thrombocytopenia. Patients with COVID-19 may develop immune thrombocytopenia (ITP) with bleeding complication.[8,9] Bleeding can be minor or major bleeding such as UGIB which may eventually be life threatening if not detected early.

UGIB is a medical emergency.[10] Initial measures of resuscitation include proper airway protection, intravenous access and fluids. Blood products needs to be cross matched and made available as soon as possible.[10] Endoscopic services with an experienced team such as the one in HKL should be on standby and be made available once the need arises. Ideally patients' needs to be resuscitated and stabilised adequately prior to endoscopy. Patients can be scoped within a time frame of 24 hours after adequate resuscitation as per latest guidelines statement.[10,11] Some of the methods used to achieve endoscopic haemostasis include injection, thermo-coagulation methods and by deploying hemoclips.[12]

One of the aims of the study is to assess the demographics of the UGIB cases in COVID-19 patients. To date, this would be the first study done in Malaysia evaluating the incidence and endoscopic characterization of UGIB in COVID-19 patients. A larger sample size will be needed to further risk stratify and assess the risk factors of UGIB in COVID-19 patients.

This study also has limitations. The first is that this study is retrospective, which introduces bias. Incidences of UGIB might have been over or underestimated. Second, the number of cases is limited and therefore a larger sample size will be needed to assess the risk factors of UGIB in COVID-19 patients.

CONCLUSION

Thrombotic events remain the main challenge in Covid-19 patients. This demographic analysis does, however, indicate that UGIB is still a real phenomenon and should not be disregarded.

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