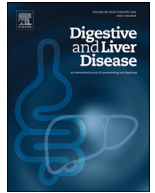




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Digestive Endoscopy

Analysis of patients attitude to undergo urgent endoscopic procedures during COVID-19 outbreak in Italy



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ABSTRACT

We conducted a survey to investigate to what extent the fear of COVID-19 has influenced the patients decision to undergo or to cancel endoscopic procedures. We collected data from 847 patients from 13 centres. The main indication for endoscopy was anemia, followed by pain and unexplained weight loss. The percentage of not presenters progressively increased throughout the three weeks of study, from 15.1% at the beginning to 48.2% at the end. 37 (34.2%) upper GI endoscopies and 112 (56.3 %) colonoscopies showed an organic cause explaining the symptoms presented by the patients, respectively; 5 cases of gastric cancer (4.6%) and 16 cases of colorectal cancer (CRC) (6.0%), respectively, were detected; during the second week the percentage of organic diseases found at upper endoscopy was 19 (33.3%) with 5 cancer (8.7%), and 61 (49.1%) at colonoscopy, with 2 CRC (1.6%); finally, during the third week the corresponding figures were 19 (48.7%) for upper GI examinations, with 3 gastric cancers (7.7%), and 43 (60.5%) with 4 (6.5%) CRC cases found. We conclude that patients weighted the fear of having a clinically relevant disease with the fear of becoming infected by coronavirus, and a relevant percentage of them (29.4%) decided not to attend the endoscopy suites at the scheduled date.

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1. Introduction

First appearing in Wuhan, China, the coronavirus disease of 2019 (COVID-19) is caused by severe acute respiratory syndrome Coronavirus 2 (SARS-CoV2) [1,2]. Given the rapid spread of this virus with consequences on an international scale, COVID-19 was declared a pandemic by the World Health Organization on March

11, 2020 [2] and over the past four months the number of cases of infection has exceeded 3700,000 worldwide, with more than 260,000 deaths. Up to May 07, 2020 around 215,000 cases of coronavirus disease 2019 (COVID-19) and 30,000 deaths have been reported in Italy, with the majority arising from Lombardia (30%) and Piemonte (15%) [3].

The clinical features of COVID-19 are varied, ranging from asymptomatic state to acute respiratory distress syndrome and multiorgan dysfunction. The common clinical features include fever (not in all cases), cough, sore throat, headache, fatigue, headache, myalgia and breathlessness. Conjunctivitis has also been described. Such symptoms are altogether indistinguishable from those

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observed in other respiratory infections. In a subset of patients, by the end of the first week the disease can progress to pneumonia, respiratory failure and death. However, the incidence of less common features like diarrhea, nausea, vomiting and abdominal discomfort varies significantly among different study populations, along with an early and mild onset frequently followed by typical respiratory symptoms [4]. More recently, a growing clinical evidence reminds us that the digestive system in addition to the respiratory system may serve as an alternative route of infection, possibly when people come into contact with asymptomatic carriers or persons with mild intestinal symptoms at an early stage [5–7]. The incidence of gastrointestinal symptoms, including nausea and/or diarrhoea, is uncertain; some authors report a frequency below 5%, while others estimate it to be as high as 50% [8]. The psychological impact on the general public has been already assessed in China, where a survey was conducted on 1210 people to better understand their levels of psychological impact, anxiety, depression, and stress during the initial stage of the COVID-19 outbreak [9]. The survey has shown that 53.8% of respondents rated the psychological impact of the outbreak as moderate or severe; 16.5% reported moderate to severe depressive symptoms; 28.8% reported moderate to severe anxiety symptoms; and 8.1% reported moderate to severe stress levels.

However, the impact that the outbreak of COVID-19 is having on the patients' attitude to attend the GI units in order to undergo endoscopic procedures is not clear, even if such procedures have been judged by their GP to be "relatively urgent" and as such may benefit of a fast track booking path (see Material and Methods).

We conducted a retrospective survey in 13 GI Units in Northern Italy (Lombardia and Piemonte) to investigate to what extent the fear of COVID-19 has influenced the patients decision to undergo or to cancel scheduled endoscopic procedures during the coronavirus outbreak though prescribed as relatively urgent by the GPs. In particular, we tried to understand whether belonging to a subset of patients with relatively urgent prescriptions could overcome the fear of being infected by SARS-CoV2 inside the hospital.

2. Material and methods

In Italy, the National Health System (NHS) guarantees all patients open access to medical procedures and consultations, regardless of age, status or medical conditions. Moreover, in Italy, more than 95% of all endoscopic procedures are performed inside hospital facilities which are at present substantially overwhelmed with COVID patients and burdened by COVID-related layout reorganization issues [10]. Patients must hold a prescription by their GPs or, in case of urgent/emergent need, may directly access to the emergency room. Medical procedures within the NHS are classified in 4 categories: class "U", ideally due in 3 working days; class "B" and "D", due in 10 and 60 days, respectively; and class "P", not urgent, to be performed within 6 months. This method is intended to provide an efficient and clinically driven access to diagnostic facilities, with a very fast track access for class U prescriptions and a fast track access for class B ones, whereas class D and P normally enter a longer waiting list, based on local availability and regional policies. After receiving a class U (i.e., a very fast track) or a class B (a fast track), each patient can book the required procedure either by telephone via a regional call center or directly by any local hospital, where a definite number of positions are reserved for these two classes. During normal periods, the demand of class B procedures largely outnumbers availability, with minimal or no "non presenter" patients.

We undertook this retrospective survey to assess the impact of COVID epidemic on patients and procedures prescribed as class B and also to investigate endoscopic outcomes and diagnosis in those patients still willing to reach the hospital for endoscopic examina-

Table 1

Indications for endoscopic examinations during the 3-week survey (in brackets the number of non-presenters). Pain= epigastric or abdominal pain; Imaging= suspicion of a neoplasia at CT or MR; routine follow up= scheduled control following endoscopic polypectomy or cancer surgery.

Indications	I week	II week	III week
Anemia/bleeding	76 (3)	42 (16)	36 (14)
Colo-rectal cancer screening	53 (10)	38 (11)	34 (13)
Fobt+	31 (3)	27 (8)	24 (11)
Pain	38 (12)	38 (14)	47 (36)
Imaging	14 (0)	11 (1)	5 (2)
Weight loss	8 (3)	4 (2)	5 (1)
Change in bowel habits	10 (6)	10 (2)	5 (2)
Dyspepsia	16 (10)	8 (7)	5 (3)
Follow-up	56 (2)	29 (9)	31 (28)
Others	60 (6)	50 (6)	36 (8)
Total	362 (55)	257 (76)	228(118)

tions. We did not assess true urgent (class U) requests (to be performed within 78 hours) because it is reasonable that this class might be less affected by the COVID-19 contingency.

For this retrospective survey, we recruited 10 GI units from Lombardia, and 3 from Piemonte, two regions with a very high COVID-19 prevalence, particularly the former, which actually accounts for almost half of the fatalities occurred in Italy. We choose GI Units with more than 5,000 procedures per year, among which a significant number of class B procedures too.

In order to collect information, we prepared a simple questionnaire on an Excel sheet (see Appendix) listing patient's age, type of scheduled endoscopic procedure (i.e., upper or lower endoscopy), indication, and outcome of the procedure if regularly carried out. These data were collected by one gastroenterologist at each Centre, starting on March 30th, including the last three consecutive weeks of March, i.e., from March 9 until March 27. We choose this time frame since in Lombardia and Piemonte endoscopic examinations were carried out under no particular restriction until March 8, when all the hospitals were formally invited to cancel elective procedures except for class U and B indications in order to prepare for the massive flux of COVID 19 patients. On the other hand, in the same period, national restrictive measures were adopted, which greatly limited movement of persons unless deemed absolutely necessary, for example to attend medical visits or examinations (so called quarantine). Finally, already since the first period of quarantine, social media, newspapers and television supported the perception that hospitals could have been very at high risk of transmitting COVID infection.

3. Results

We collected data from 847 patients from 13 centres, 408 males (48.2%) and 439 females (51.8%). The mean age of scheduled patients was 63.1 yrs (range: 21–89), and the median was 71.4 yrs.

During the first week of survey, the main indication for a class B endoscopic procedure was anemia, followed by pain, unexplained weight loss, an imaging procedure suggesting possible cancer, dysphagia, change of bowel habit, and other, for example positivity of faecal immunochemical test (FIT) within the frame of colorectal cancer screening (Table 1). In the first week, there were 362 planned procedures; in the second week the number decreased to 257, and in the third week it fell to 228 (Table 2).

The distribution of indications was similar during the second and third week. Overall, during the entire period, 249 (29.3%) of scheduled patients did not show up. However, the number of not presenters progressively increased throughout the three weeks of study, being 55 (15.1 %) at the end of the first week, 76 (29.6%) at the end of the second week and 110 (48.2%) at the end of the

Table 2
Features of endoscopic examinations during the 3-week survey (for explanations, see the text).

	Scheduled procedures	Presenters	Non-presenters	Positive diagnosis (% of total presented)	Number of cancers found (% of total presented)
First week	Upper GI endoscopies	108	28	37 (34.2 %)	5 (4.6 %)
	Lower GI endoscopies	199	27	112 (56.3 %)	16 (6.0 %)
	(Total = 362)	(total 307)	(total 55)		
Second week	Upper GI endoscopies	57	32	19 (33.3 %)	5 (8.7 %)
	Lower GI endoscopies	124	44	61 (49.1 %)	2 (1.6 %)
	(Total = 257)	(total 181)	(total 76)		
Third week	Upper GI endoscopies	39	54	19 (48.7 %)	3 (7.7 %)
	Lower GI endoscopies	71	64	43 (60.5 %)	4 (6.5 %)
	(Total = 228)	(total 110)	(total 118)		
Total	847	598	249	291 (48.7 %)	35 (5.9%)

Table 3
Features of endoscopic examinations during the 3-week survey splitted into data coming from Piemonte (above) and Lombardia (below) (for explanations, see the text).

	Scheduled procedures	Presenters	Non-presenters	Positive diagnosis (% of total presented)	Number of cancers found (% of total presented)
First week	Upper GI endoscopies	19	3	8 (42.1 %)	1 (12.5 %)
	Lower GI endoscopies	37	5	20 (54.1 %)	6 (0.3 %)
	(Total = 64)	(total 56)	(total 8)		
Second week	Upper GI endoscopies	15	3	5 (33.3 %)	3 (0.6 %)
	Lower GI endoscopies	16	2	11 (68.7 %)	0
	(Total = 36)	(total 31)	(total 5)		
Third week	Upper GI endoscopies	11	2	6 (54.5 %)	1 (16.6 %)
	Lower GI endoscopies	15	5	3 (20.0 %)	0
	(Total = 33)	(total 26)	(total 7)		
Total	133	113	20	53 (39.9 %)	11 (9.8%)

	Scheduled procedures	Presenters	Non-presenters	Positive diagnosis (% of total presented)	Number of cancers found (% of total presented)
First week	Upper GI endoscopies	89	25	29 (32.5 %)	4 (13.8 %)
	Lower GI endoscopies	162	22	92 (56.8 %)	10 (10.8 %)
	(Total = 298)	(total 251)	(total 47)		
Second week	Upper GI endoscopies	42	29	14 (33.3 %)	2 (14.2 %)
	Lower GI endoscopies	108	42	50 (46.3 %)	2 (0.04 %)
	(Total = 221)	(total 150)	(total 71)		
Third week	Upper GI endoscopies	28	52	12 (46.4 %)	2 (15.3 %)
	Lower GI endoscopies	56	59	40 (71.4 %)	4 (10.0%)
	(Total = 195)	(total 84)	(total 111)		
Total	714	485	229	237 (48.9 %)	24 (4.9%)

third week (Table 2). During the corresponding period of the previous year, the rate of non presenters was stable during each week, and did not exceed 2% of total. The age of presenters was higher than that of non presenters (63.9 yrs vs 57.0 yrs, $p < 0.05$) in the first week, but was no difference in age was observed in week 2 (63.3 vs 64.6, $p = NS$) and week 3 (63.4 vs 64.0, $p = NS$). Overall, a pathological condition potentially associated with the symptoms complained by the patients was found in 48.7% of the presenters (Table 2). There was an increasing trend of positive diagnoses along the three weeks period, both for upper and lower endoscopy. In particular, cancer was detected in 35 (5.9%) of subjects. During the first week, respectively 37 (34.2%) upper GI endoscopies and 112 (56.3 %) colonoscopies showed an organic cause to explain the symptoms presented by the patients, among which 5 cases of gastric cancer (4.6%) and 16 cases of colorectal cancer (CRC) (6.0%), respectively, were detected; during the second week the percentage of organic diseases found at upper endoscopy was 19 (33.3%) with 5 cancer (8.7%), and 61 (49.1 %) at colonoscopy, with 2 CRC (1.6%); finally, during the third week the corresponding figures were 19 (48.7%) for upper GI examinations, with 3 gastric cancers (7.7%), and 43 (60.5%) for colonoscopies, with 4 (6.5%) CRC cases found (Table 2).

Interestingly, the data were fully comparable among the two Italian Regions. For comparison, data are presented in Table 3.

A major concern is the drop in the number of patients who showed up to perform colonoscopies planned in the CRC screening activity; the number of performed/scheduled examinations during the 3 weeks were 45/46, 24/37 and 18/44, respectively.

4. Discussion

As expected, the drop in the number of subjects attending the hospital was paralleled by the increasing trend in the number of infected cases and related deaths in the Country, suggesting that patients decided not to attend the endoscopy suites even in case of clinically relevant indications, namely class B ones, which guarantee a fast track in the hospital. Thus, patients pondered the fear of having a clinically relevant disease with the fear of being infected by coronavirus, and a relevant percentage of them (29.4%) decided not to show up by the endoscopy units on the scheduled date. At present, the consequences of this choice are not clear. Speculating that the rate of organic and of cancer diseases should remain stable over three weeks, the reduced number of performed procedures will greatly influence the fate of non-presenters in the near future. This can be considered an indirect effect of the COVID-19 outbreak on our health system and must be attributed to the adverse psychological consequences of COVID-19 infection on the general patient population and particularly on

GI patients. We think that the trend observed is not the results of confounding, since the majority of the procedures have been booked before the lock down date and thus no effect of the epidemic on changing prescription habit by GPs is to hypothesized. Also, no effect of geographical location would bias our observations, since the data from the two regions are comparable as far as percentages of presenters/vs non presenters are concerned. Moreover, the prescription policy in the two northern Regions is the same, including the availability of a fast track (class B) or of an urgent track (Class U). Finally, regional healthcare authorities of both Lombardia and Piemonte have clearly stated that class B and U prescriptions had to be safeguarded and accomplished throughout the epidemic phase. Thus barriers for patients with a class U or B prescription were only of psychological and not of regulatory nature. On the other hand, it is true that the pressure on health care system has been overwhelming on hospital admissions. The present survey however did not focus on inpatients.

In our study, the background data are those observed during the first week, when no particular restrictive measures applied. The whole 3-week period attendance, with a global presenter rate

of 70.6%, should be compared with a 98% figure observed during the same period of the previous year (data not shown).

Presently, we have no idea of possible duration of this pandemic in our Country. Therefore, we are unable to judge risk/benefit ratio of avoiding scheduled class B endoscopic procedures. The recently published international guidelines allow us to implement all measures that both patients and physicians should follow to avoid/minimise risk of COVID-19 infections in the hospital and in particular in the GI suite [11,12]. We should right now offer different pathway for patients with high and low risk of COVID-19 infection. We should certainly not encourage discontinuation of screening procedures or fast-track (class B) procedures because the consequences of these choices outweigh the benefits of preventing COVID-19 infections in our patient population.

Conflict of interest

None.

Appendix A

Questionnaire for participants

Centre, N° and location:

Head of Endoscopy Unit:

Number of outpatient endoscopic procedures in 2019:

First Week (from 03/09/2020 to 03/13/2020)

Name (initials)	Sex	Age	Type of endoscopic procedure	Main symptoms/indications to procedure	Final diagnosis	Date of postponement

Second Week (from 03/16/2020 to 03/20/2020)

Name (initials)	Sex	Age	Type of endoscopic procedure	Main symptoms/indications to procedure	Final diagnosis	Date of postponement

Third Week (from 03/23/2020 to 03/27/2020)

Name (initials)	Sex	Age	Type of endoscopic procedure	Main symptoms/indications to procedure	Final diagnosis	Date of postponement

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