Study of the gastrointestinal tumor progression during the COVID-19 epidemic in Wuhan

Editor

Due to the restriction caused by the COVID-19 epidemic, the cancer community currently faces many difficulties[1]. First, tumor patients had to risk the chances of exposure when they went to the cancer clinic. Second, cancer treatment could predispose patients to more serious effects of COVID-19. Third, infection of COVID-19 after tumor surgeries could lead to higher levels of comorbidity[2,3]. Thus, the surgeons and oncologists have to weigh the risk of COVID-19 infection against the magnitude of benefit of cancer treatments. Especially, along with the restoration of the medic order in the hospitals in Wuhan, the effects of those delayed treatments are now showing up in the following months[4].

In this study, the medical records of patients from gastrointestinal department, Wuhan Union hospital, were collected and analyzed. Information recorded included demographic data, tumor clinical and pathological TNM stages, levels of hemoglobin and albumin on admission. We retrospectively analyzed 137 tumor patients admitted to our department on March and April, 2020 and 351 patients in the same period in 2019 (*Table 1*). A

Table 1 Clinical characteristics of patients admitted on March and April in 2019 and 2020

	Gastric cancer		Colorectal cancer	
	2019	**2020**	**2019**	**2020**
Number of cases	150	51	201	86
Age (y)	61·0 (54·0-66·0)	58·0 (51·0-67·5)	61·0 (53·8-69·0)	62·0 (49·0-67·0)
Gender, female	63 (42·0%)	13 (25·5%)	83 (41·3%)	44 (51·2%)
Time from symptom onset to admission (days)	30·0 (20·2-60·0)	60·0 (21·0-120·0)	30·0 (15·0-90·0)	60·0 (30·0-90·0) *
BMI on admission	22·1 ± 3·1	22·3 ± 3·4	23·3 ± 3·4	21·6 ± 3·5 *
Hb on admission	113·2 ± 24·7	103·5 ± 39·1	119·3 ± 22·1	108·1 ± 29·5 *
Alb on admission	38·3 ± 6·1	34·3 ± 11·0	40·1 ± 5·0	36·5 ± 8·9 *
Patient Category	* $p = 0·049$			
Surgery	121 (80·7%)	32 (62·7%)	172 (85·6%)	64 (74·4%)
Chemoradiotherapy	23 (15·3%)	15 (29·4%)	22 (11·0%)	15 (17·5%)
Giving up treatment	6 (4·0%)	4 (7·8%)	7 (3·5%)	7 (8·1%)
Pathology type			* $p = 0·001$	
G0	2 (1·7%)	0 (0·0%)	3 (1·7%)	4 (6·2%)
G1	5 (4·1%)	1 (3·1%)	11 (6·4%)	0 (0·0%)
G2	25 (20·7%)	3 (9·4%)	134 (77·9%)	40 (62·5%)
G3	88 (72·7%)	28 (87·5%)	24 (14·0%)	19 (29·7%)
G4	1 (0·8%)	0 (0·0%)	0 (0·0%)	1 (1·6%)
Depth of tumor invasion				
pT1	23 (19·1%)	2 (6·2%)	18 (10·5%)	7 (10·9%)
pT2	13 (10·7%)	3 (9·4%)	22 (12·8%)	4 (6·2%)
pT3	33 (27·3%)	8 (25·0%)	101 (58·7%)	37 (57·8%)
pT4	52 (43·0%)	19 (59·4%)	31 (18·0%)	16 (25·0%)
Lymph node metastasis	* $p = 0·006$		* $p = 0·04$	
pN0	46 (38·0%)	6 (18·8%)	98 (57·0%)	35 (54·7%)
pN1	14 (11·6%)	9 (28·1%)	46 (26·7%)	15 (23·4%)
pN2	25 (20·7%)	2 (6·2%)	28 (16·3%)	14 (21·9%)
pN3	36 (29·8%)	15 (46·9%)		
Distant metastasis	* $p = 0·016$			
cM0	118 (97·5%)	28 (87·5%)	167 (97·1%)	61 (95·3%)
cM1	3 (2·5%)	4 (12·5%)	5 (2·9%)	3 (4·7%)
Vessels invasion, +	60 (49·6%)	18 (56·2%)	40 (23·3%)	16 (25·0%)
Nerves invasion, +	70 (57·9%)	21 (65·6%)	44 (25·6%)	18 (28·1%)
Adjuvant chemotherapy,yes	8 (6·6%)	4 (12·5%)	2 (1·2%)	6 (9·4%) *

A continuous variables were presented as mean ± SD or median (IQR), categorical variables were showed as n (%). *P*-values were from t test for normally distributed continuous data and from Mann–Whitney U test for abnormally distributed continuous data. *P*-values were from χ^2 test for categorical data.
* $p < 0.05$ data in 2019 compared to data in 2020.

special group of patients, who were diagnosed before the epidemic (2020 January) but had been suspended for 2 months were specially studied to identify the progression (*Table S1*, supporting information). We expressed descriptive data as mean (SD) or median (IQR) for continuous variables and number (%) for categorical variables. Student's t test was used for continuous variables.

We compared the TNM stages and nutrient status of the patients in the 2 years. In 2020, patients had lower nutrition state, as there are lower levels of Hb, Alb and BMI. But only in the colorectal cancer group, there are significant differences. In terms of pathology, in 2020, we identified significantly higher levels of lymph node metastasis in both cancers. But in colorectal cancer, there are deeper depths of tumor invasion and in gastric cancer; there are more percentages of distant metastasis. Previously, before the epidemic in Wuhan, few patients received adjuvant chemotherapy before surgery, but due to COVID-19 affection, this situation is promoted in the colorectal cancer patients (*Table 1*).

We specially focused on progression of the patients who were diagnosed with gastrointestinal tumor on January, 2020. Many of these patients previously planned to spend the spring holiday with the family and come back 7 days later, but ended up with a delay of 2 months on average. The paired t test results proved that 2 months' delay led to advancedd lymph node metastasis stage an worse nutrition status in gastrointestinal tumor patients (*Table S1*, supporting information).

Previously, the immediately priority was to control the COVID-19 pandemic[5]. But now Wuhan already entered into the aftermath and recovery phase. At this moment, evaluating the effects of COVID-19 on cancer mortality will be a new priority. Unfortunately, the data presented by our medical center suggested "a long shadow beyond infection". Still, our experience alerted that surgeons and oncologists in other countries and regions should be prepared ahead of time. For sure we believe that finally we could succeed in fighting against COVID-19. But we could do something more to reduce the sacrifice.

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Supporting information

Additional supporting information can be found online in the Supporting Information section at the end of the article.