Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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LETTER TO THE EDITOR

Excessive anxiety in IBD patients is unnecessary for COVID-19

To the editor,

Currently, 2019 novel coronavirus (SARS-CoV-2) infection disease (COVID-19) broke out in Wuhan, China and spread worldwide [1,2]. Due to the highly infectious and pathogenic nature of SARS-CoV-2, the public has shown excessive anxiety and even panic. Inflammatory bowel disease (IBD) is a chronic non-specific intestinal disease, including ulcerative colitis (UC) and Crohn's disease (CD), and many of these patients have anxiety [3]. The anxiety not only comes from the intestinal diseases that already exist, the current epidemic situation of COVID-19 has also made their anxiety worse. Emotions are an important part of the management of IBD patients, because a less optimistic attitude can make their bowel symptoms recur [4].

To date, there have been no reports of a confirmed COVID-19 in IBD patients. As known, the coronavirus binds to the angiotensin-converting enzyme 2 (ACE2) protein, enters the cells, leading to COVID-19 with the contribution of transmembrane protease, serine 2 (TMPRSS2) [5]. In human small intestine and colonic epithelial cells, ACE2 exhibits higher expression than lung [6]. According to autopsy results, the bowel of patients with COVID-19 appeared segmental narrowing and expansion [7].

Immune disorders in IBD patients, coupled with current research reports, are IBD patients more susceptible to COVID-19? We could obtain some information from the public IBD database [8]. After screening, a total of 23 UCs, 37 CDs, and 21 non-IBDs were included in the analysis (Table 1). Each subject had paired tissue samples of rectal and terminal ileal biopsies. Analysis of the transcriptome data of these samples, we found that the expression of ACE2 in the terminal ileum was significantly higher than that in the rectal colon, with a fold change of 9.8 times ($P < 0.001$). The expression of ACE2 in the UC rectum was not significantly higher than that in non-IBD. In the terminal ileum of CD, ACE2 expression was also not higher than that of non-IBD. At the protein level, ACE2 was not higher in UC and CD patients than in healthy controls [9]. These results indicate that the expression of ACE2 does not show a significant difference between IBD and non-IBD patients. In addition, TMPRSS2 expression is lower in the terminal ileum than in the rectum ($P = 0.005$). Compared with non-IBD, there was no significant difference in TMPRSS2 expression in the rectum and terminal ileum of patients with IBD.

Therefore, we speculate that patients with IBD may not be susceptible to COVID-19. However, this is only a theoretical guess, and we need to further understand the actual risk of COVID-19 in IBD patients. At least, in theory, IBD patients don't need to be overly worried and anxious. Like everyone else, personal protection is an important measure to prevent SARS-CoV-2 infection.

Table 1 The expression of ACE2 and TMPRSS2 mRNA in the terminal ileum and rectum of IBD patients compared with non-IBD. The data used for analysis were from the IBDMDB database.

Subjects	Biopsy site	ACE2		TMPRSS2	
		Fold Change	*P*-value	Fold Change	*P*-value
Non-IBD	Terminal ileum vs Rectum	9.8	< 0.001	0.5707	0.005
UC vs non-IBD	Rectum	1.0639	0.844	1.1138	0.576
CD vs non-IBD	Terminal ileum	0.71395	0.248	0.9851	0.933

Author contributions

Hong-Gang Wang and Xiao-Zhong Yang designed the research; Hong-Gang Wang and Rui Xie analyzed the data; Hong-Gang Wang and Tian-Heng Ma wrote the paper.

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Disclosure of interest

The authors declare that they have no competing interest.

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