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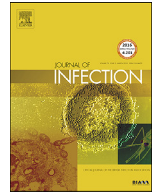

Letter to the Editor

Public health might be endangered by possible prolonged discharge of SARS-CoV-2 in stool

Dear editor,

According to a recent report, since December 8 2019, a novel identified coronavirus, SARS-CoV-2(previously named as 2019-nCOV) is causing outbreak of pneumonia in Wuhan, China and become the major concern throughout the world [1]. The World Health Organization has recently announced this disease to constitute a public health emergency of international concern and then named this disease as Corona Virus Disease 2019 (COVID-19). By the 28 Feb, 2020, more than 80,000 confirmed cases including over 2500 death cases were officially announced. Till now, the infection control and surveillance focus on respiratory system. The ignorance of SARS-CoV-2 in digestive system may cause troubles in the disease control.

Gastrointestinal symptoms seem to be uncommon in patients with COVID-19 when compared with Severe Acute Respiratory Syndrome (SARS) (Table 1) [2,3]. However, they should not be ignored as the increasing rate of diarrhea occurs in confirmed COVID-19 patients according to a recent report that 14 of 138 confirmed patients had diarrhea [4]. Those early reports may not represent actual rate of gastrointestinal symptoms caused by SARS-CoV-2, because in early stages of the outbreak, the limited resources for detection were only provided to those patients with severe symptoms like respiratory distress syndrome. About 27 percent of SARS patients have diarrhea and since full-length genome sequences identified that SARS-CoV-2 is 79.5% identical to SARS-CoV and share the same receptor angiotensin-converting enzyme 2 (ACE2), it is estimated that rate of gastrointestinal symptoms would be higher in patients with COVID-19 [5].

One possible route for the movement of SARS-CoV-2 into digestive system may be “trachea-esophagus-ileum-colon” as single-cell transcriptom analysis showed ACE2, the entry receptor for SARS-CoV-2, highly expressed in lung AT2 cells, esophagus upper and stratified epithelial cells and enterocytes from ileum and colon [6]. The evidence for this route is that all of the specimens including pharyngeal swab, esophageal biopsy, gastric mucosa, rectal mucosa, duodenal mucosa and stool tested positive to SARS-CoV-2 in two cases [7]. Another route may be bloodstream infection since SARS-CoV-2 was directly detected in bleeding site in one case [7]. In addition, expression of ACE2 in endothelial cells and macrophages, as well as the detection of SARS-CoV in plasma and blood lymphocytes also support the possibility of bloodstream infection of SARS-CoV-2 [8,9].

The discharge guideline depending on respiratory tract test also meets challenge. In cases, SARS-CoV-2 infected infant initially behaved as vomiting, diarrhea or feeding intolerance [15]. Interestingly, while the virus test of nasopharyngeal swab switched from positive to negative after treatment, the rectal swab specimens still tested positive [10]. These cases remind the clinicians that the rectal swab may be equally important to the pharyngeal swab even the patient is asymptomatic which challenge the latest published guideline provided by National Health Commission of China that two successive negative of the respiratory tract tests are regarded as the standard for discharge and termination of compulsory isolation for COVID-19 patients [11].

A famous well-described clusters of infection of SARS in Amoy Gardens, Hong Kong drew the attention of health official on fomite transmission because two thirds of the confirmed SARS patients in this Amoy Gardens had diarrhea [12]. As findings showed that patients with SARS could discharge SARS-CoV in their stool up to 73 days after symptom onset, the stools with the virus became the resource of contamination of airdrops and a variety of environmental surfaces, which may contribute to the clusters of infection [13]. Similarly, evidence showed that SARS-CoV-2 were identified in 4 stool specimens (4 out of 62), so fomite transmission should not be ignored in the transmission of SARS-CoV-2 since the virus may move from respiratory tract in to gastrointestinal tract the recovered patients may discharge the stool with virus for a long time [9].

According to a recent published report by CDC of China, the community acquired infections are becoming the predominant route in transmission [14]. Based on these cases and the lessons from SARS, we recommend 1) the attentions should be drawn in digestive symptoms and stool or rectal scwrab tests for patients with suspicion or confirmed SARS-CoV-2 infection, 2) preventive education and publicity on hands washing and bathroom infection, 3) compulsory isolation till scwrab tests switch to negative, 4) surveillance and adequate disinfection in latrines in areas with severSARS-CoV-2 infection to avoid fomite transmission.

Table 1
Presenting clinical features in COVID-19 series and SARS.

Items	COVID-19 [2]	COVID-19 [3]	COVID-19 [4]	SARS [6]
Journal	Lancet	Lancet	JAMA	Lancet
Cases	41	99	138	1425
Published data	2020/1/24	2020/1/29	2020/2/7	2003/3/24
Fever (%)	98	83	98.6	94
Cough (%)	76	82	82	50.4
Shortness of breath (%)	55	31	31.2	30.6
Sputum production (%)	28	NA	26.8	27.8
Diarrhea (%)	3	2	10.1	27
Death (%)	15	11	4.3	< 60 years old: 13•2% .>60 years old: 43.3%

COVID-19: Corona Virus Disease 2019; SARS: Severe Acute Respiratory Syndrome.

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Declaration of Competing Interest

The authors declare no conflicts of interest.

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