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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SARS CoV-2 Dispatches

SARS-CoV-2 positivity in rectal swabs: implication for possible transmission

Federica Novazzi[a,1], Irene Cassaniti[a,1], Antonio Piralla[a], Antonio Di Sabatino[b], Raffaele Bruno[c,d], Fausto Baldanti[a,d,1,*]

[a] Molecular Virology Unit, Microbiology and Virology Department, IRCCS Fondazione Policlinico, San Matteo, Pavia, Italy
[b] Department of Internal Medicine, University of Pavia, and IRCCS Fondazione Policlinico, San Matteo Hospital, Pavia, Italy
[c] Department of Infectious Diseases, IRCCS Fondazione Policlinico, San Matteo, Pavia, Italy
[d] Department of Clinical, Surgical, Diagnostic and Pediatric Sciences, University of Pavia, Pavia, Italy

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Since December 2019, coronavirus disease 2019 (COVID-19), caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has been spreading worldwide from China. Currently, the diagnosis is based on molecular detection of SARS-CoV-2 RNA in respiratory samples such as a nasal swab (NS) [1]. However, the evidence that a NS in patients with pneumonia was sometimes negative highlighted the need to collect alternative clinical specimens in which SARS-CoV-2 RNA could be detected.

From previous coronavirus epidemics, SARS-CoV and MERS-CoV, we learned that viral RNA could be also detected in other clinical specimens, such as a rectal swab (RS), in addition to respiratory samples [2]. Moreover, evidence of gastrointestinal involvement with SARS-CoV-2 has raised the concern of viral shedding through faecal-oral or other body fluid routes [3–5].

With this consideration, we explored the potential diagnostic role of the real-time reverse transcription polymerase chain reaction (RT-PCR) for the detection of SARS-CoV-2 performed in biological specimens different from respiratory samples. A retrospective analysis was performed to evaluate the diagnostic role of a RS in patients hospitalized from 22 February to 24 March 2020 at the Fondazione IRCCS Policlinico San Matteo (Pavia, Northern Italy).

Data from 165 patients (median age, 69.9 years; range, 2–94 years; 33 females, 132 males) hospitalized with respiratory distress were analysed. All patients had fever, a dry cough, dyspnoea and respiratory disorders, such as pneumonia. In all patients, SARS-CoV-2 RNA was tested in paired NS and RS collected at the time of hospital admission. In summary, 107/165 (64.8%) patients tested positive for SARS-CoV-2 in a NS, while 58/165 (35.2%) tested negative in a NS. All the experiments were performed according to the protocol proposed by Corman et al [1] and according to the guidelines of the Institutional Review Board on the use of biological specimens for scientific purposes, in keeping with Italian law (art. 13 D.Lgs 196/2003). All data obtained were compared with those reported by other studies [3–5].

Among patients with a positive NS, the SARS-CoV-2 rate in a RS was 10.3% (11/107), lower than that detected in the studies of Zhang et al (26.7%) [3] and Peng et al (22%) [5]. Among 58 patients with a negative NS, none of these patients tested positive for SARS-CoV-2 in a RS. Conversely, Wang et al [4] reported 2.9% patients with negative SARS-CoV-2 respiratory samples but positive in faeces or blood. Cycle threshold (Ct) values of a positive RS are reported in Supplementary Table S1. The median Ct values on a RS was 35.3 (range, 28.3–41.0), and the median Ct difference between Ct values on NS as compared with RS was +4.3 (range, 4.5 to +13.3). Interestingly, in all patients except one, the Ct values of RS were higher than the Ct values of NS samples, suggesting that active replication had not occurred in the gastrointestinal tract.

In conclusion, although the transmission of SARS-CoV-2 through direct contact with infected secretion or aerosol droplets is well known, possible transmission via other routes remains to be elucidated. Here, we described the presence of the SARS-CoV-2 RNA in a minority of RS samples, supporting the evidence of a potential shed of the virus through the faecal-oral route. However, the very low rate of SARS-CoV-2 positivity in samples different

* Corresponding author at: Molecular Virology Unit, Microbiology and Virology Department, IRCCS Fondazione Policlinico, San Matteo, Pavia, Italy.
E-mail addresses: fausto.baldanti@unipv.it, f.baldanti@smatteo.pv.it (F. Baldanti).
[1] These authors contributed equally.

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from respiratory specimens suggest a limited impact on virus transmissibility. Moreover, no detectable SARS-CoV-2 RNA in RS samples were observed in those patients who tested negative for SARS-CoV-2 in a NS sample, supporting the concept that respiratory samples remain the gold standard for the diagnosis of COVID-19.

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Ethical approval

None.

Competing interests

None.

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Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:https://doi.org/10.1016/j.jgar.2020.06.011.

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