Organ donor with PCR positive for SARS-CoV-2, it has been always no?☆

Donante de órganos con PCR positiva para SARS-CoV-2, ¿siempre no es no?

The COVID-19 pandemic has triggered important changes in our social setting, especially in the healthcare setting. Currently, the routine use of a diagnostic test to rule out or confirm a possible infection due to SARS-CoV-2 is required for most medical procedures associated with the provision of healthcare.

Although the transmission of COVID-19 from organ donors is anecdotal in the medical literature, this infection can be transmitted through substances of human origin. The assessment protocols of organ donors regarding infections due to SARS-CoV-2 include universal PCR screening through samples from the respiratory tract.[1] Most protocols, including the reference document currently used in Spain, discards donation in case of active COVID-19 infection or positivity in the screening of potentially asymptomatic donors.[2] Quite recently, in our country, in people with a past medical history of COVID-19, donation was only eligible if over 14 days had passed since symptom onset, if the patient had been asymptomatic for over 72 h, and if the PCR already tested negative for SARS-CoV-2.

This is the case of a potential organ donor with a past medical history of COVID-19 with clinical healing, but with a positive PCR for SARS-COV-2. Still, doctors decided to go on with the whole process of donation. This is the case of a 21-year-old male who, after close contact with a confirmed case, was diagnosed with COVID-19 through PCR in a nasopharyngeal exudate sample. He presented with high fever and was isolated on the day of the diagnosis without any other symptoms. He was admitted on day +37 due to severe traumatic brain injury, with still a positive PCI in the nasopharyngeal exudate and a positive IgG test for SARS-COV-2, which is why it was decided to treat the patient in the non-COVID-19 patient circuit. The patient was pronounced brain dead on day +44 with a new positive PCR in the in the nasopharyngeal exudate that very day.

To study the infection due to SARS-CoV-2, the samples from the nasopharyngeal exudate were collected in tubes of viral transport medium (DeltaSwab virus®, Deltalab SL, Barcelona, Spain). A real-time PCR was performed (Allplex 2019-nCoV Assay®, Seegene. Inc, Seoul, Korea) that detects 3 different target genes: *E* (envelope), *RdRp* (RNA polymerase-RNA dependent), and gene *N* (nucleocapsid protein). A real-time PCR for the detection of 2 different targets (S and ORF1ab) (Simplexa Covid-19 Direct®, Diasorin) was performed as an emergency technique. The serological test was performed using the chemoluminiscent immunoassay (CLIA) of microparticles (SARS-CoV-2 IgG Architect, Abbott, United States). The donor's microbiological results are shown on Table 1.

After considering that the donor's positivity was probably due to the presence of genetic material of the virus without infective capabilities (elevated values of Ct through PCR), it was decided to move on with the process of heart donation because there was a female patient on the waiting list who was eligible to receive the transplant, and who had already given her written informed consent.

The heart transplant was completed uneventfully with favorable clinical evolution and hospital discharge of the patient who had no COVID-19-like symptoms at the follow-up. The patient was monitored through a PCR to confirm or rule out the presence of SARS-CoV-2 in nasopharyngeal exudate samples with negative test results on days 5, 16, and 51 after the transplant. Serological tests for SARS-CoV-2 performed on days 16, and 51 after the transplant also tested negative for IgM and IgG.

To our knowledge this is the first case ever reported of an organ donor with a positive PCR for SARS-CoV-2 still eligible to move on with the process of donation. As a matter of fact, heart transplantation was completed without clinical or microbiological evidence of infection transmission. Other cases of organ donation with a past medical history of COVID-19 who kept on testing positive on the PCR have already been described in the medical literature available. Also, in these cases, it was decided that positivity was not indicative of the presence of an infective virus.[3,4] Lang et al. describe a pulmonary transplant in a female patient with end-stage lung disease after COVID-19 who kept on testing positive on the PCR with a cycle threshold (Ct) > 30. On suspicion of the presence of viral genetic material without infective

Table 1 Determinations of COVID-19 in the donor.

Date	Results of the RT-PCR					Serology IgG SARS-CoV-2
	E (Ct)	RdRp (Ct)	N (Ct)	S (Ct)	ORF1ab (Ct)	
Day 0	+ (35.7)	+ (37.6)	+ (35.2)			
Day +37 (TBI)	–	–	+ (34.7)			+
Day +44 (BD)				+ (32.2)	+ (33.1)	
Day +44 deferred*	–	–	–			

BD, brain death; Ct, cycle threshold; NP, not performed; TBI, traumatic brain injury.
E, RdRp, N, S, and ORF1ab are the SARS-CoV-2 genes (genetic targets) explored in the PCR test.
* Test conducted with the same sample.

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capabilities, it was isolated, sequenced, and characterized in Vero cells that tested negative 7 days later. However, the possibility of confirming this suspicion through a viral culture is not feasible in a process of donation due to significant time constraints.

In the current context of sustained community transmission we should expect to see more and more potential donors with a clinical-microbiological situation similar to the one reported in our case. If we rule these patients out indiscriminately, we may be compromising the access of our patients to transplant therapy. Therefore, in our opinion, the option of donation should be considered even in the presence of a positive PCR for SARS-CoV-2 as long as certain circumstances are observed in the donor: (i) COVID-19 asymptomatic or oligosymptomatic status; (ii) asymptomatic status for a long period of time; (iii), elevated Ct levels (>30–34 on the PCR), and (iv) positivity for IgG antibodies.

With these requirements, the benefit of the transplant regarding survival, and quality of life should prevail in the decision-making process of organ donation vs a low risk of infection transmission. As a matter of fact, the Spanish clinical practice guidelines on this regard have just been updated.[5]

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Conflicts of interest

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Comparison of the characteristics of patients with type 2 coronavirus disease and seasonal influenza admitted to an intensive care unit☆

Comparación de las características de los pacientes con enfermedad por coronavirus tipo 2 y la gripe estacional ingresados en una unidad de cuidados intensivos

Disease produced by SARS-CoV-2 has often been compared with that caused by influenza virus. In fact, considering its spreading capacity and the relatively low lethality rates initially reported in China, SARS-CoV-2 was thought to be more similar to the flu than SARS-CoV-1. However, it is important to understand that disease produced by SARS-CoV-2 is not the flu.[1,2]

Few studies have directly compared the characteristics of patients requiring admission to the Intensive Care Unit (ICU) in the SARS-CoV-2 pandemic and flu epidemics. In this regard, important differences are likely to be found between the two respiratory viral infections, including the required supportive measures, the proportion of individuals that develop severe illness, and the in-ICU mortality rates.[3–5]

Evaluation of the characteristics, prescribed treatments, outcomes and mortality rates of the two diseases could be used to improve future prognostic assessments and planning in ICUs.[6]

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