LETTER TO THE EDITORS

How to guarantee liver transplantation in the north of Italy during the COVID-19 pandemic: A sound transplant protection strategy

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Dear Editors,

The impact on the Italian national healthcare service of the COVID-19 pandemic has already been reported [1]. To date, measures have been taken to adapt our healthcare systems [2]. The number of patients infected in Italy since 20 February 2020 has closely followed an exponential trend, challenging our universal-coverage public healthcare system especially in terms of the availability of intensive care unit (ICU) beds, healthcare providers, and blood products [1,2].

The mission of the COVID-19 Lombardy ICU Network was to coordinate the critical care response to the outbreak, identifying top priorities such as increasing ICU capacity and implementing containment measures [2].

Between 1 and 18 March 2020 in Italy, the percentage of COVID-19 patients requiring ICU treatment was consistently around 10% [1]. As a result, the ICU bed capacity of our public tertiary hospital (ASST Grande Ospedale Metropolitano Niguarda, Milano) was increased from 35 to 117 (+234.3%), and 70 out of 105 anesthesiologists were moved to the COVID-19 ICUs.

In the circumstances, COVID-19 has inevitably impacted transplant activity. Before the COVID-19 pandemic, the dedicated ICU serving abdominal organ transplant recipients admitted approximately 150 patients/year to our hospital. As a result of the emergency measures put in place, almost all elective surgery has been canceled, with the exception of certain major urgent oncological procedures.

Our hospital's trauma center and its neuro-ICU for patients with all types of neurosurgical and neurological injuries continue to be operational, and we have a dedicated ICU bed for donor management. Critical admissions use dedicated COVID-19-free pathways.

Mitigation strategies were put in place to ensure the availability of transplant activity in our hospital, and a special COVID-19 donor/recipient protection protocol introduced, as already reported by others [3-6].

As recommended by the Italian Transplant Authority, all deceased donors are screened for COVID-19 by real-time reverse-transcriptase polymerase chain reaction assay of nasal and pharyngeal swab and chest CT, and all transplant recipients tested before undergoing transplantation surgery by swab and chest X-ray in our center. In addition, all transplant recipients are fully informed of the current pandemic outbreak, ongoing screening protocols (for both donors and recipients), and all concerns regarding the risk of donor-to-recipient risk COVID-19 transmission are addressed.

From February 21 to April 15, 2020, we performed 16 liver transplantations (LT), accounting for 61.5% (16/26) of all the LTs performed in Lombardy. Compared to the same study period in 2019 (17 LT performed; eight local donors evaluated), transplant activity in our hospital has been fairly similar, although preliminary data for the whole of Italy show a 25% reduction in organ procurement during the first month of the COVID-19 outbreak [7].

Recipients receiving these grafts were more likely to have hepatocellular carcinoma (HCC) (10/16; 62.5%) with a relatively low MELD score (mean MELD, 21; range 16–36) except for one urgent retransplantation. The predominance of HCC recipients is a specific

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feature of our wait-list. No restrictions to our allocation policy, which is not based exclusively on the MELD score, were introduced during this period [8].

Only one recipient contracted a COVID-19 infection during the postoperative period. Symptoms were mild, and the patient returned to a negative swab while on quarantine and before discharge.

Fortunately, there have been no wait-list deaths during this period. In the same period, two of the 10 deceased donors evaluated in our hospital were found to be COVID-19-positive and their organs therefore refused. Four of the LTs were performed thanks to donations made in our hospital while four other liver grafts were sent out for urgent LTs.

The numbers confirm the need to protect the donation and transplant process while of course ensuring that all procurement and transplant procedures follow a coronavirus-free pathway for donors, recipients, and the clinicians involved.

In compliance with our transplant protection strategy, every transplant patient was admitted to an ICU not serving COVID-19 patients.

We have demonstrated that a transplant protection strategy is valid and feasible in a really COVID-19 stressed hospital and that transplant activity can continue, with none of the transplant programs selectively stopped a priori, but each case discussed taking into account resources at that precise moment.

We agree, however, that at the moment shifting resources from transplantation to COVID-19 emergency is inevitable even if it affects the principle of equity.

The question of whether patients with advanced malignant disease or end-stage liver disease should be made to wait for transplantation remains a debated issue.

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Conflicts of interest

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