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LETTER

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COVID-19: emerging challenges for oncological surgery

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Abstract: After the initial description of COVID-19 in Wuhan, China, Italy was hit first in Europe and the impact has been rapidly enlarging. In early April 2020, at the epidemic peak, there were more than 33,000 patients hospitalized including more than 4,000 in Intensive Care Units (ICU). On May 15, the confirmed cases in Italy approached 224,000 patients (5th highest number worldwide), with more than 31,000 deaths (3rd highest number worldwide). Non-urgent, non-cancer procedures were stopped to reallocate nurses and anesthetists to face the COVID-19 emergency. The timeline of the progressive involvement by COVID-19 patients of 36 hospitals referrals for surgical oncology in Italy was shown in this article. Only emergency, and elective oncological procedures were allowed with obvious limitations in terms of numbers of operable cases. Criteria for prioritizing oncologic patients waiting for surgery were released by each region, mainly issuing main factors for decision making, biological aggressiveness or symptomatic disease, the interval from the latest treatment, and the risk of un-resectability if delayed. However, the lack of facilities mostly influenced the decision or not to proceed. The risk of operating on oncological patients with ongoing SARS-CoV-2 syndrome is real, and a preoperative flowchart for ruling out this occurrence has been promoted. In our center, the day before surgery, chest CT and swab testing have been introduced, and a similar behavior has been recommended prior to patients' discharge. The care of patients addressed for surgical oncology should be featured by dedicated paths to secure proper and prompt disease management.

***Keywords*:** COVID-19, SARS-CoV-2, Italy, oncology, surgery, hospital

COVID-19 has been declared a pandemic by the World Health Organization (WHO) on March 11, 2020 (*1*). Global confirmed cases approached 4,445,000 patients with 302,493 deaths across over 187 countries as of May 15, 2020 (*2*).

After the initial description in Wuhan, China (*3,4*), Italy was hit first in Europe and the impact has been rapidly enlarging with Lombardy and Veneto being the two most affected regions. Italian government ordered a nationwide lockdown effective from March 12, 2020. In early April, at the epidemic peak, there were more than 33,000 patients hospitalized including more than 4,000 in Intensive Care Units (ICU). On May 15, the confirmed cases in Italy approached 224,000 patients (5th highest number worldwide), with more than 31,000 deaths (3rd highest number worldwide) (*2*). Lombardy, the most affected district, suffered from a huge number of severely diseased people overwhelming its capability to absorb the need for care. That, despite Lombardy is one of the most efficient regions within the Italian NHS, recently ranked as the 9th among 195 healthcare systems worldwide (*5*). In this context, a high number of contagions among the hospital health care professionals (HcP) has been reported, with over 10,000 healthcare professional infected and more than 100 physicians died of the disease (*6*). On March 9, the Lombardy lockdown was established, and on March 12 the entire country underwent lockdown, almost completely released on May 18.

Non-urgent, non-cancer procedures were stopped to reallocate nurses and anesthesiologists to face the COVID-19 emergency. This measure freed ventilators for patients with COVID-19 and converted surgical theatres into additional intensive care unit (ICU) beds as needed.

Most surgical departments were closed and converted to medical wards specifically dedicated to COVID-19 patients. More and more surgeons were also requested to help medical personnel in the COVID-19 elective and emergency wards, an absolutely unpredictable event. Figure 1 shows the timeline of the progressive involvement by COVID-19 patients of 36 hospitals referrals for surgical oncology in Italy (*7*).

In this setting, only emergency, and elective oncological procedures were allowed with obvious limitations in terms of numbers of operable cases. Exceeding half of the surgical departments largely decreased their own activity, doubling in most cases the

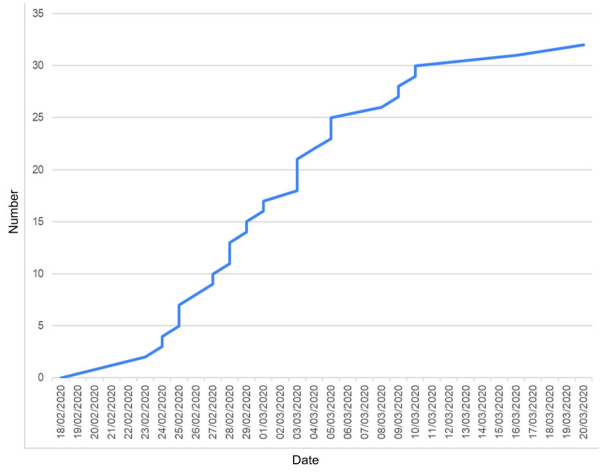

Figure 1. Curve of involvement by COVID-19 infected patients of 36 hospitals referrals for surgical oncology in Italy.

waiting lists (*7*).

Criteria for prioritizing oncologic patients waiting for surgery were released by each region, mainly issuing main factors for decision making, biological aggressiveness or symptomatic disease, the interval from the latest treatment, and the risk of un-resectability if delayed. However, the lack of facilities mostly influenced the decision or not to proceed. The constrain of ICU beds, the lack of expert anesthesiologists emphasized by the need of interventions just for patients with advanced diseases, the reductions of other facilities, as endoscopy, interventional radiology, and radiotherapy hampered the clinically and biologically based prioritization. NHS authorities activated oncological hub-and-spoke programs identifying as Hubs, those hospitals recognized as referrals in surgical oncology, and preferentially not heavily involved in caring for SARS-CoV-2 positive patients. Provided criteria for prioritizing the patients essentially based on tumor biology, tumor burden, therapeutic alternatives, and American Society of Anaesthesiologists (ASA) score risk (*8*), the Hubs should have served for caring for those patients who could not be operated on in those hospitals mostly impacted by the COVID-19 (spoke). Theoretically, wisdom, it partially failed for those Hub centers which resulted also as COVID-19 hospitals, then suffering similar conditions to those affected institutions in need of sharing their oncological waiting lists (*7*). Conversely, the centers, which were able to address the request to be Oncological Hubs were the Cancer Centers without emergency departments. For sure, Cancer Centers physically separated from emergency and infectious disease departments, should be implemented to preserve surgical oncology activity even in conditions similar to that.

The risk of operating on oncological patients with ongoing COVID-19 syndrome is real, a preoperative flowchart for ruling out this occurrence have been promoted. In our center, the day before surgery, chest CT and swab testing have been introduced, and a similar behavior has been recommended prior to patients' discharge.

The risk of healthcare professionals represents something to be considered too. The WHO recommends minimizing the need for personal protective equipment (PPE), and in doing that demands to rationalize its distribution (*9*). However, providing PPE to the healthcare professionals is a priority since in-hospital transmission could deeply undermine their ability to address the request of a system already under significant strain. One third of the departments of surgical oncology in Italy suffered surgeons becoming SARS-CoV-2 positive (*7*), which significantly impacted the working power of the teams. Providing extensive testing for healthcare professionals, and warranting adequate availability of PPE, is also crucial for protecting those patients affected from other problems, and particularly those oncologic. This issue still remains to be addressed in many institutions. Particular attention should be also paid to the safety assessment in the operating room as emphasized by many scientific societies (*10,11*).

Hospital layouts enabling respect for social distance, with paths for patients with infectious disease, and those for oncological patients clearly separated, should be the next target. Existing modalities of telemedicine would help and should probably be implemented to overcome for now and for the future the problem of travelling for many patients. Similarly, it should be done for multidisciplinary meetings, particularly involving multiple centers.

In conclusion, the adaptation of the system did not work adequately. As partial justification, it is worthwhile to be mentioned that the COVID-19 outbreak was really overwhelming. Indeed, Italy has been the country where the COVID-19 outbreak started in the Western world. At that time, it was still an epidemic, and the country did not have benefit of the time needed to better organize an efficient reaction. An option, which was conversely suitable for the other nations despite most of them anyhow heavily suffered the epidemic, which meanwhile became a pandemic (*12*). Preemptive measures such as the acquisition of PPE, and swab test kits, and support to the general practitioners, should have been implemented once the risk of diffusion was advisable. Strengthening the healthcare system within the territory would have been probably helpful in better monitoring the contagion searching for the asymptomatic carrier (*13*), and trying to prevent complications by improved patients' care. Missing all of that we have had to sustain an overwhelming strain for the hospital's network, otherwise well established and internationally recognized: its reaction anyhow allowed to overcome the pandemic peak. This dramatic experience should convey helpful insights for the future. Particularly now, since the outbreak is decrementing, testing the population, treating the patients, and tracking the contagion paths are crucial

rules to erase the risk of a recurrence. In this sense, hospitals, as potential clusters, should be an example of a perfect application of these recommendations. In that, the care of patients addressed for surgical oncology should be featured by dedicated paths to secure proper and prompt disease management.

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