



Coronavirus Disease (COVID-19) and Peritoneal Malignancies

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To the Editor,

As the number of coronavirus disease 2019 (COVID-19) cases are rapidly increasing, hospitals are finding it progressively difficult to accommodate an increased patient load and provide services, both emergent and elective in nature. During this pandemic, it has become essential to ensure adequate allocation of resources for the management of both COVID-19 patients and non-COVID-19 patients, and in particular, patients with cancer. Delayed cancer treatment may lead to an increased risk of disease progression and subsequent, worsening prognosis [1].

The Lancet reported an estimated 59.7% cancer surgeries being postponed in India during the peak 12 weeks of disruption due to the COVID-19 pandemic and lockdown, translating to about 51,100 cancer patients being denied of treatment. This delay in treatment could have led to disastrous consequences, such as increase in the tumor load leading to increased morbidity, inoperability, and eventual palliative intent of treatment [2].

Early studies have demonstrated that cancer patients are more likely to develop a severe form of COVID-19 [3, 4] with a fatality rate up to eight times as high as compared to non-cancer patients [3]. Peri-operative infection with SARS-CoV2 has been associated with high mortality with more than half patients developing post-operative pulmonary complications

in the form of pneumonia, requirement of post-operative mechanical ventilation, and acute respiratory distress syndrome [5]. However, no association has been found between chemotherapy and mortality related to COVID-19 [4].

Peritoneal malignancies, both of primary and metastatic origin, benefit greatly from cytoreductive surgeries (CRS) with or without hyperthermic intraperitoneal chemotherapy (HIPEC) [6]. The performance of these potential life-saving surgeries in the current health crisis poses a significant dilemma to treating physicians. Another treatment offered for these malignancies is pressurized intraperitoneal aerosolized chemotherapy (PIPAC). Though its efficacy has not yet been proven, it is hypothesized to increase patient lifespan [3, 7].

Benefits of CRS-HIPEC are well established in peritoneal malignancies with a median disease-free survival of 98 months being achieved in high volume centers for pseudomyxoma peritonei and median survival of more than 50 months after CRS-HIPEC for peritoneal mesotheliomas. On the other hand, median survival of 1 year has been achieved with isolated systemic chemotherapy in peritoneal mesotheliomas [3]. Thus, despite higher complication risks, improved survival benefits with surgery can justify the need to target curative intent with surgical procedures and thus improve the overall outcome of the patients.

These procedures can, however, lead to exhaustion of resources, such as intensive care unit (ICU) beds and ventilators in the post-operative period along with the increased need for blood and blood products in the peri-operative period besides being labor exhaustive with requirement of large teams for peri-operative management [8]. This puts both the healthcare professionals and the patients, at an increased risk of infection with the SARS-CoV2 virus.

The decision to proceed with surgery must be made keeping in mind both risks and benefits associated with a major definitive surgery versus the risks of a lesser aggressive treatment modality with a higher chance of recurrence and progression. Also, the risk of death due

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to cancer itself must be weighed against the risk of death due to the infection. Shrikhande et al. reported a post-operative morbidity rate of 5.65% with no mortality in patients posted for elective oncosurgeries during the pandemic, with only 6 out of 494 patients testing positive in the post-operative period, none of whom required intensive care [9].

It is recommended that treatment decision for peritoneal malignancies should be made on a case-to-case basis. The patient's disease status, alternative treatment strategies, and institutional policies play important factors in making this decision. Studies early in the course of the pandemic recommended neoadjuvant systemic chemotherapy in cases of peritoneal metastasis from high-grade appendiceal, gastric, and colorectal cancers, along with high-grade mesotheliomas, ovarian cancers, and desmoplastic small round cell tumors [8, 10]. It was also recommended to continue systemic chemotherapy in patients who were completing neoadjuvant chemotherapy and were responding well in an attempt to delay surgery. The RENAPE and BIG-RENAPE groups [3], however, in their recent treatment proposals, make no recommendations of preferring chemotherapy over surgery in view of the COVID-19 pandemic. In cases where CRS with or without HIPEC would be the gold standard of treatment, such as pseudomyxoma peritonei; resectable, malignant peritoneal mesotheliomas; resectable peritoneal metastasis of colorectal origin not responding to chemotherapy; and limited peritoneal metastasis from ovarian carcinomas, surgery has been recommended, albeit with better patient selection criteria. Chemotherapy has been proposed for these indications only when scheduling of surgeries would prove difficult in the current scenario. Enhanced recovery pathways would serve as an essential component when opting for surgical management and would help reduce hospital stay, complication rates, and thus expedite patient turnover [11].

The decision to proceed for surgery must be made keeping two factors in mind, the possibility of achieving complete cytoreduction and a low to moderate peritoneal carcinomatosis index (PCI) [3]. In cases with low tumor burden, surgical resection involved would be comparatively less, with lesser chances of post-operative complications and hence morbidity and mortality. Besides, efforts for better patient selection must take into account the fact that younger patients having few or no comorbidities with lesser disease burden serve as better candidates for these procedures. Besides routine pre-operative assessment before the procedure, additional screening for COVID-19 infection and any chance of inoperability should be ruled out [3].

In conclusion, for resectable peritoneal malignancies, CRS with or without HIPEC can be carried out, with strict

patient selection criteria, adequate availability of resources, and sufficient workforce comprising of adequately trained health personnel while adhering to all safety measures. Decision to delay surgery must be considered carefully, keeping in mind the possibility of disease progression in high-grade tumors and an inadequate response to chemotherapy.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they do not have conflict of interest.

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