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Short Communications

Impact of COVID-19 on Radiotherapy Practice- Retrospect Over Half a Decade.

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Abstract

Cancer like Covid 19 has been an enigma. The wide variety of presentation, multiple treatment options and prognosis if detected early has been similar for both. Hence when Covid 19 pandemic was on peak the cancer patients were most at the receiving end. The urgent need for treatment and the everlasting fear of compromised immunity and mortality all made it much worse than ever witnessed. Radiotherapy remains one of the cornerstones for successful cancer management. If treated in early stage for many cancers radiation can cure up to 70% cases. For many cancers be it after surgery or radical, radiotherapy management is time consuming and prolonged lasting between 4-7 weeks. We briefly highlight the impact of covid 19 on the management of radiotherapy protocols, any alterations and impact of vaccines on these cancer patients.

INTRODUCTION

As of November 28, 2021 more than 260 million cases of COVID 19 got detected and caused more than 5 million deaths worldwide.(1) which is continuing wreaking havocs with increasing number of cases day by day and raising concerns with new mutations possibly introducing us with all the Greeks alphabets available.(2) Similarly another twin of COVID 19 in case of mortality is slowly clawing its patients to death worldwide with 19.3 million cases and 10 million deaths according to GLOBOCAN 2020 data. (3) This deadly duo of SARS CoV 2 and cancer together can become catastrophic if neglected. Nearly 2% of the total COVID-19 patients prior to May 2020 had cancer, and the statistics are alarming as the patient can be referred to in “double trouble” to suffer from cancer with the added misery of infection with COVID-19.(4) Both the direct and indirect consequences of the COVID-19 pandemic are of increasing concern. India was one of the most severely affected countries in Europe during both the first and second wave of the pandemic.

BACKGROUND

Much routine practice changed during the pandemic and safety measure taken for benefits of patients and staffs. Patients were screened and triaged before they enter the hospital premise. Patients who have visited the hospital for routine follow-up were advised to reschedule their appointment to a later date or offered telephonic/video consultation. Invasive follow-up investigations postponed especially, if not planned to be acted upon immediately. Patients due for RT treatment simulation and starting were triaged and prioritized based on their diagnosis, prognosis, and urgency for initiating treatment. Hypofractionation schedules have proven to be beneficial in many clinical scenarios (breast, prostate, and lung cancer) and pursued where appropriate. Such as Palliative RT treatment for symptomatic relief delivered in single fraction or weekly once regimens. Patients with infective symptoms but tested negative for COVID-19 or patients having cough/ dyspnea due to existing illness were allowed to continue treatment with adequate protective equipment. In patients with suspected or proven COVID-19 infection and who are symptomatic treatment deferred until resolution or till they are deemed noncontagious by local health bodies.Patients with suspected or proven COVID-19 infection but who are asymptomatic were deferred treatment until their resolution or till they are deemed noncontagious by local health bodies. In selected patients (successfully treated or asymptomatic) requiring prompt initiation or continuation of RT, treatment was allowed after observing all the necessary precautions.

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The decision to use or defer concurrent therapies such as chemotherapy/targeted and immunotherapies was considered based on the risk-benefit ratio, for a particular patient. The COVID-19 pandemic surge resulted in 42% of our patients having a non–standard-of-care pathway. This outcome demonstrates a significant impact of the COVID-19 crisis on routine cancer care. (5)

DISCUSSION

Cancer patients are at higher risk of COVID-19 infection because of their immunosuppressive state caused by both tumor itself and anticancer therapy adopted. Patients with cancer who develop COVID-19 have high probability of mortality around 25.6% compared to general population.(6) Increased risk of severe COVID-19 infection and related death for cancer patients seen in hematological malignancies(7), thoracic malignancy(8) and those diagnosed with cancer for >2 years.(9)

Worldwide lockdown and many hospitals concentrating their own resources to cope with the spread of the pandemic and most of the physicians were engaged in the intensive care unit (ICU) to support fellow medical specialists resulted in diminished cancer care facility.(10) Improper and shortage of PPEs was a major concern. Reduced health-care workforce, despite these measures resulted in illness (self or family member), fear of occupational exposure, and halting of nonessential services (transport and day-care facilities). High-volume centers faced greater difficulty providing service when staff levels were decreased challenging resource allocation. Healthcare worker being the frontline worker been infected with the severe acute respiratory syndrome corona virus 2 (SARS-CoV-2) and have lost their lives worldwide during the pandemic.(11) Leading to scarcity healthcare workers ultimately hampering patient care. Major comprehensive cancer care centers were either closed(12) or converted to exclusive COVID 19 centers(13) leaving patients clueless in continuing their treatment. According to study In India Between March 1 and May 31, 2020, the number of new patients registered decreased from 112 270 to 51 760 (54% reduction), patients who had follow-up visits decreased from 634 745 to 340 984 (46% reduction), hospital admissions decreased from 88 801 to 56 885 (36% reduction), outpatient chemotherapy decreased from 173634 to 109 107 (37% reduction), the number of major surgeries decreased from 17 120 to 8677 (49% reduction), minor surgeries from 18 004 to 8630 (52% reduction), patients accessing radiotherapy from 51 142 to 39 365 (23% reduction).(14)

All these lead to reconsideration in radiation therapy clinical decision-making; thus, to reduce treatment duration and minimize infection risk during a pandemic, hypofractionated regimens have been revised. Moreover, telemedicine shows its helpfulness in the radiotherapy field, and patients get the supportive care they need minimizing their access to hospitals. Patient selection is one of the most critical aspects for radiation oncologists. Challenging the role of radiation oncologist to duly triage the patients that have been referred for radiotherapy.(15) Many hypofractionated regimens such as FAST-Forward regimen(16) in breast malignancy gained acceptance,(17) single fraction regimen used more frequently in condition such as haemostatic RT(18) and palliative radiotherapy in bone metastasis,(19)the role of SRS/SBRT gained prominence in view of decreasing hospital visit and exposure. (20)

Advent of vaccine for SARS Co V 2 was a silver lining beneath the dark cloud and also rekindled the hope both among the general population and Oncologist. Till now 8 vaccines got approved by WHO for COVID-19.(21) Many fingers pointed for safety related to these vaccines.(22) Clinical and molecular similarities between cancer and COVID-19 and summarize the four major signaling pathways at the intersection of COVID-19 and cancer, namely, cytokine, type I interferon (IFN-I), androgen receptor (AR), and immune checkpoint signaling.(23) Some types of COVID-19 vaccines were created using messenger RNA (mRNA), a new technology that allows a faster approach than the traditional way vaccines are made. Messenger RNA (mRNA) vaccines teach our cells how to make a protein that will trigger an immune response inside our bodies,(24) mechanism simillar to many cancer vaccines. All the resulting in many anticancer drugs and similar mechanisms were tried for developing drugs and vaccines for eliminating COVID 19 pandemic. Long lost practices like LDRT (low dose radiotherapy came into surface for its potential role in halting the COVID 19.(25) This also focused some rare complication of combinations of vaccines with RT such as vaccine induced radiation recall phenomenon.(26) Various guidelines came into picture to whether vaccinate cancer patients during radiation therapy. ASTRO encourages cancer patients who are actively receiving treatment such as radiation therapy to consult with their oncologists about the timing for vaccination, injection location and any unique considerations relevant for their treatments. Individuals with a prior history of cancer who are not in active treatment are encouraged to seek vaccination whenever it is made available to them.(27)

CONCLUSION

Covid 19 pandemic did not change the way we practice radiotherapy entirely but did adopt to new ways. The core idea is remaining the same, highlighting some of the hidden concepts in Radiation Oncology and similarities between COVID 19 and cancer. Exploring the technology in oncology translating into COVID 19 prevention and treatment. This

taught us to be more vigilant and innovative in the way we practice Radiation Oncology.

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