



Research Article

COVID – 19 Pandemic And The Challenges In The Management Of The Cancer Patients At The Rural Cancer Centre And Hospital Of India.

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ABSTRACT

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Purpose – Covid-19 pandemic and the challenges in the management cancer patients at the rural cancer centre and hospital of India.

Material & Methods –All the histo-pathologically proven cancer patients registered for diagnostic, supportive and treatment by chemotherapy and Radiation therapy from January to December 2020 in the Department of Radiation oncology of a Rural Cancer centre & hospital of India were included for the analysis. Delay in diagnosis and management along with changes in radiotherapy and chemotherapy protocols due to COVID-19 were studied.

Results – A total 643 patients were registered in the year 2020 from first January to 31st December, out which 267 (41.52%) were males and 376 (58.47%) were females.

The most common malignancy reported was Head and Neck 173 (26.90%), followed by Cervical Cancer 110 (17.1%) and Breast Carcinoma 103 (16%) patients. Overall, more than 70 % of patients were in advanced stages (Stage III & IV). Treatment breaks were observed in the month of March, April and May due to country wise lockdown and then intermittently during the rest of the months till Dec. 2020. A total of six patients during their treatment and 5 staff tested positive for SARS-CoV-2 infection.

Conclusion – Department could manage the Cancer Patients treatment following guidelines and taking precautions. Patients could complete their treatment with some delay, treatment breaks and modifications in the treatment & follow up protocol. Battle with COVID - 19 is still on and hopefully department will continue with the same preventive protocols in managing cancer patient's treatment with more confidence due to vaccination of almost all the health care workers.

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INTRODUCTION

Corona virus disease 2019 commonly designated as COVID-19, caused by severe acute respiratory symptoms coronavirus 2 (SARS-CoV-2), has been in the limelight since the beginning of New Year 2020 [1,2]. The World Health Organization (WHO) declared this outbreak as Public Health Emergency of International Concern (PHEIC) on 30th January 2020, and a pandemic on 11th March 2020 [3]. Transmission of the virus seems to occur mainly by respiratory droplets [4]. Cancer is the second leading cause of death globally, accounting for an estimated 18.1 million new cancer cases and 9.6 million deaths, or one in six deaths, in 2018 [5]. All over the world, 'Lock down' is found to be the only effective method to control this outbreak. Due to the high infectivity and alarming increase in the number of cases affected by this contagious disease, most of the hospitals have stopped elective interventions, wards and operating rooms are emptied for emergency services and ventilators have been commandeered for this patient group [6]. The hub is maintained as COVID-19-free by requiring patients to self-isolate when they have been accepted for intervention and regular testing for COVID-19 in the pre-treatment period [7].

COVID-19 pandemic has massively disrupted all over the world as in India too. Our cancer centre is situated in rural area of Maharashtra, India & that too was affected too much. On March 24, 2020, the government of India issued a nationwide lockdown, limiting the movement of the 1.3 billion population as a preventive measure against the pandemic that entailed suspension of all nonessential public and private transport and prevented people from leaving their homes [8]. All institutes & schools were closed. Most of non-essential services were asked to be done from home. But at same time health care system was put on forward to fight against this infectious disease and to take care of infected COVID-19 patients as well as to continue with all medical emergencies and some important medical services like laboratory facility, radio-diagnostics, obstetrics and also the oncology. There were guidelines, recommendations and protocols from various Authorities, Institutions, Hospitals from various countries to be followed in diagnosis,

management and personal protection [9,10,11,12,13].

Ours is one of the very few rural cancer centres in India. The centre being situated in rural area of Ahmednagar district of Maharashtra. Continuing oncology services at this rural place was a real challenge as most of the patients were poor and coming daily for radiation treatment (as radiation treatment goes for 5-7 weeks). Chemotherapy treatment was also a challenge at this rural place as patients required admission and fear of infection among them was always there. It being a part of the Rural medical College, we were able to give oncology care even during initial days of COVID pandemic. Challenges were restrictions of movement, Dental and elective surgery services, restricted diagnostic services, need for the extra space in the wards so as to keep new cases separately for the risk of observing the new patients / under treatment patients for Coronavirus infection, restricted liberty to do liberal diagnostic / screening RT-PCR tests and the liberal use of personal protective equipment kits (PPE kits). This study is designed to see the challenges in the management of the cancer patients at this rural cancer centre and hospital along with various protocols in continuing cancer care services with all safety during COVID-19 pandemic.

MATERIAL & METHOD:

A total of 643 histo-pathologically proven patients of various cancers who were registered in the department during the study period from January 2020 to December 2020 for diagnostic, supportive and treatment by chemotherapy and Radiation therapy (External Beam Radiotherapy and brachytherapy) were included for analyses. This descriptive longitudinal study was conducted in the department of Radiation Oncology in an Institute situated in the rural area of Maharashtra, India, after taking permission from Institutional Ethics Committee, Pravara Institute of Medical Sciences-Deemed University (IEC PIMS-DU) (No. PIMS/IEC-DR/2021/10). Department of radiation oncology is equipped with one Linear Accelerator (Clinac-DBX; Varian Medical System, Palo Alto, CA, USA) for External Beam radiation Therapy (EBRT) by 3DCRT & IMRT,

Eclipse planning system (Vers.15.3) and High Dose Rate (HDR) Gamma Med Brachytherapy unit. Planning computed topography (CT) scans are performed on (CT scan machine; Siemens Healthcare, Erlangen, Germany). Chemotherapy is given in day care (16 beds) and indoor wards (40 beds) & supportive care in OPD & IPD.

File Records were accessed for various patient parameters. Treatment records were taken from patients Radiation and Chemotherapy Files. Total admissions in Day Care and indoor Radiation Oncology wards were taken from registration counter and respective wards also. All the patients who were admitted in the day care and indoor wards for various oncological management and supportive care were also recorded. Delay in diagnosis and management along with changes in radiotherapy and chemotherapy protocols due to COVID-19 were studied. Various preventive measures taken by the department staff, patients and relatives were recorded. Delay in treatment due to COVID-19 infection to the patients, patient relatives and department staff were documented.

Institution and department COVID protocol:

Govt. Of India has given various guidelines time to time and to be followed by general public (patients) and the health care worker. Various apex Radiation Oncology centres has made their own protocols for cancer treatment related issues and changes in treatment protocol. COVID-19 testing before and weekly during treatment was also recommended. Due to less availability of testing facilities and PPE kits as recommended, and if the cancer patients COVID-19 status was not known, we in the department of Radiation Oncology prepared our own protocol which was and is faceable to follow and is less expensive.

-All patients and relatives were screened at hospital entry points for mask, any symptoms and temperature checks were done.

-Changes in waiting area for patients- Waiting chairs and Benches were distantly placed with numbers.

RESULTS:

During the study period from 1st January 2020 to 31st December 2020 a total of 643 new cases of cancer of various diagnostic sites were registered. Every month cases for follow up, chemotherapy and supportive care were also coming and the

-One patient one relative policy was followed at department entry point.

-All patients and relatives were checked for mask and asked to sanitise hands.

-Initial paper check was done separately and history taking and examination of patients were done with least possible time, maintaining distance.

-Patients for radiation therapy on Linear Accelerator were accepted on out patient basis if they can afford to come by their own vehicle. Radiation patients who were coming by public transport were advised admission in the wards (10 days quarantine + till finishes radiation treatment).

-Sanitisation of in use areas is practiced immediately after use in OPD, Doctors and Nursing counters, LA and Brachytherapy rooms and Day care ward.

-Compulsory use of personal protection by using mask (N-95), cap, head shield, shoe covers, gloves, gown etc. was ensured.

Changes in treatment Protocol:

-Preference was given for day care Chemotherapy. Three weekly chemotherapy schedules were given the preference to avoid frequent visits. Patients were asked not to visit the department for Day-8 blood test, instead get it done at nearby laboratory and inform telephonically.

-Neoadjuvant chemotherapies were planned for cases when there was delay in definitive surgery and this was indicated.

-Hypofractionation schedules were used to shorten the overall treatment time as and when feasible.

-Palliative Radiation therapy was planned for five or single fractions, if the expected prognosis was poor.

-Supportive care patients were given all advice to take care at home and with telephonic consultation

yearly sum of which was 16,569. Monthly details of which is shown in Table -1 and Chart – 1. A total of 1798 patients were given ward care in day care ward and indoor wards. Monthly details of which is shown in table -2. Details of various

diagnostic sites registration is shown in Chart - 2. Commonest malignancy reported during the year 2020 was Head & Neck cancer (173) followed by cancer cervix (110) and cancer breast (103). Stage wise distribution of three major sites is shown in Table 3 and Chart – 3. Various oncological management given to the cancer patients were External Beam Radiation Therapy (EBRT) by 6-

MV linear accelerator (Clinac-DBX; Varian Medical System, Palo Alto, CA, USA) by 3DCRT & IMRT. A total of 243 patients were planned for EBRT and out of which 224 patients completed their treatment. Details of EBRT treatment is shown in Table 4. Brachytherapy treatment was delivered by High Dose Rate (HDR) Gamma Med Brachytherapy unit to 57 patients.

Table:1 – New Registrations and follow up patients’ detail from January 2020 to December 2020.

S. No.	Months	Jan.	Feb.	Mar ch	Ap ril	May	June	July	Aug ust	Sep	Oct	Nov	Dec	Total
New Registration		82	56	46	25	55	82	66	43	47	47	44	50	643
Old Registration		1854	1950	1411	479	1106	1664	1710	1191	1152	1520	1379	1153	16569
Grand Total		1936	2006	1457	504	1161	1746	1776	1234	1199	1567	1423	1203	17212

Chart:1 – New Registrations and follow up patients’ detail from January 2020 to December 2020.

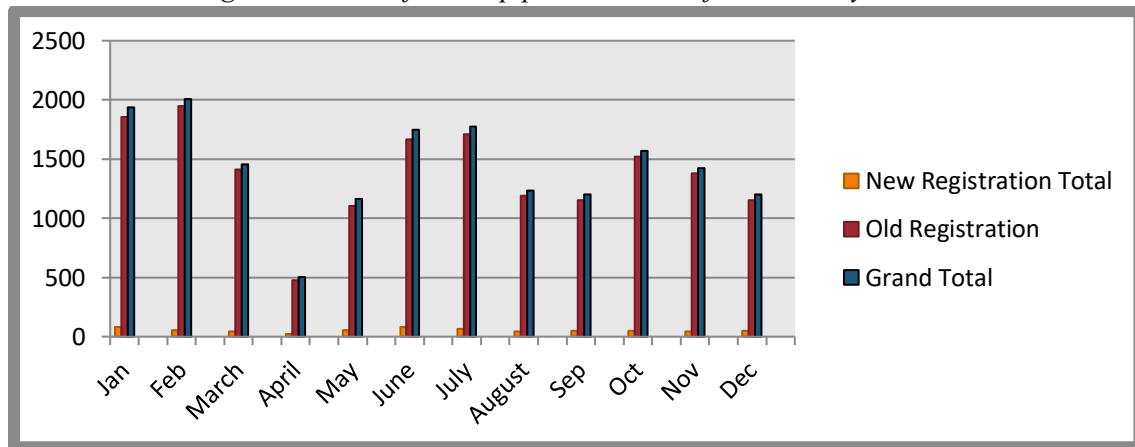


Table 2: Ward care in day care ward and indoor wards detail from January 2020 to December 2020.

	Year - 2020												
Wards	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Day Care	119	105	97	40	70	81	107	86	91	93	101	110	1100
Ward	93	74	59	10	56	62	56	54	54	75	44	61	698
Total	212	179	156	50	126	143	163	140	145	168	145	171	1798

Chart 2: Various diagnostic sites registration details from January 2020 to December 2020.

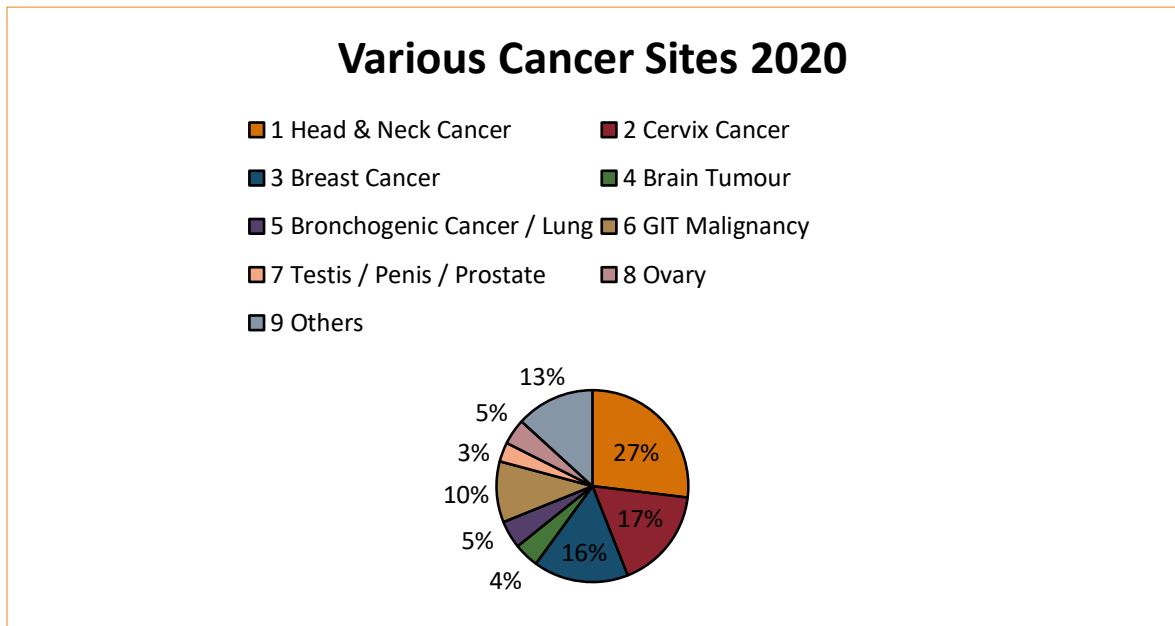


Table 3: Stage wise distribution of three major sites Cancers.

Sr. No.	Cancer Type	Stage I	Stage II	Stage III	Stage IV
1)	Head & Neck (173)	02 (1.15%)	19 (10.98%)	35 (20.33%)	117 (67.63)
2)	Cervical Cancer (110)	19 (17.27%)	20 (18.18%)	56 (50.90%)	15 (13.63)
3)	Cancer Breast (103)	06 (05.8%)	42 (40.77%)	43 (41.74%)	12 (11.65)

Chart 3: Stage Grouping for three major sites of Cancer.

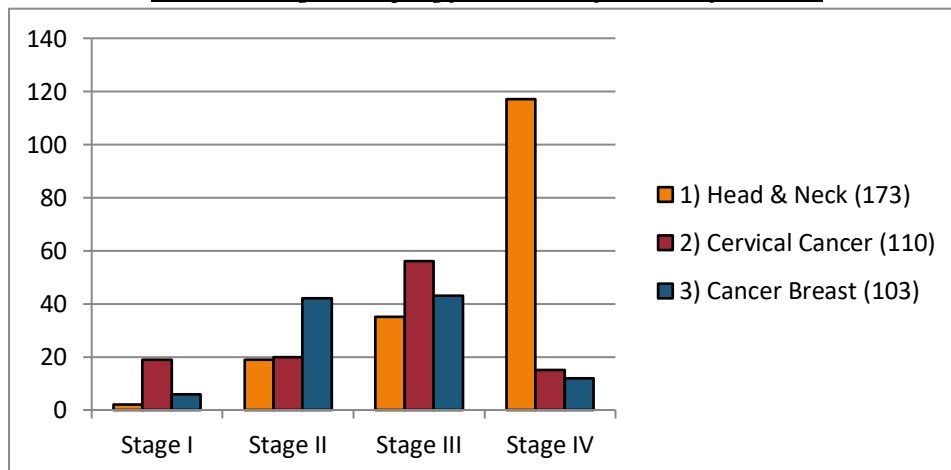


Table 4: Details of External Beam Radiation Therapy from January 2020 to December 2020.

Months Year	New Planning			Incomplete Rx	Complete Rx	Palliative	Curative Radical
	M	F	T				
Jan	12	20	32	4	28	7	25
Feb	9	12	21	5	16	3	18
Mar	6	12	18	0	18	3	15
Apr	2	3	5	0	5	0	5
May	10	14	24	0	24	7	17
Jun	8	18	26	2	24	5	21
Jul	12	12	24	3	21	2	22
Aug	4	12	16	0	16	4	12
Sep	14	8	22	0	22	3	19
Oct	7	18	25	2	23	3	22
Nov	5	11	16	2	14	4	12
Dec	8	6	14	1	13	2	12
Total	97	146	243	19	224	43	200

Table 5: Details of SARS-CoV-2 infection to the patients from March 2020 to December 2020.

S. No.	Total Patients	Completed treatment	Incomplete treatment	
			Defaulted	Died
1	6	3	2	1

There was treatment delay due to SARS-CoV-2 infection to the patients, patients relative and the department staff. Details of which is shown in Table 5. One patient of metastatic carcinoma ovary patient tested positive and was expired in COVID ward during treatment. Two patients of

head and neck carcinoma and one carcinoma rectum completed their treatment with break of 2-3 weeks. Two patients one head and neck and one cervical cancer patient defaulted after they tested positive.

Total Radiation Oncology staff details for the SARS-CoV-2 infection:

Radiotherapy Technologist-	2
Radiotherapy Attendant –	1
Registration clerk –	1
Nursing staff -	1

Total- 5

There was EBRT treatment break for one week due to positive COVID-19 status of three of the Linear Accelerator unit staff at the same time. None of the faculty or the post graduate students tested positive for COVID-19.

DISCUSSION:

With the pressure of SARS Cov-2 transmission, department of Radiation Oncology did the best

possible cancer care. Though there was restricted liberty to use diagnostic and screening RT-PCR and PPE kits, we made the overall protocol of cancer patient management in such a way so that the transmission was minimised. Not much extra financial load was imparted on the patients. Institution management provided us additional wards to keep new patients who were watched for

any COVID-19 signs along with their routine workup. The molecular section of the department of Microbiology of the Institute was accredited by Government authority National Accreditation Board for Testing and Calibration Laboratories (NABL) on 5th May 2020 for doing SARS CoV-2 test on TrueNAT and Real Time Reverse Transcriptase Polymerase Chain Reaction (RT-PCR) by open and closed system from 17th October 2020.

At present, there are approximately more than 4.5 million patients with cancer in India, who are either in follow-up or different stages of treatment. In India, over 1.5 million new cancer patients are registered every year and approximately 780,000 die from cancer, which makes cancer the second leading cause of death after cardiovascular diseases [5]. The cancer care delivery system is one of the worst affected health sectors, especially in developing countries such as India, where 95% of cancer centres are situated in urban areas, while 70% of the population lives in the rural areas [5]. Abhishek S. et al discussed about the cancer care delivery Challenges in India during the COVID-19 Era and Goyal N. et al recommend the presence of cancer treatment facilities near patients' residences will greatly support them in the post pandemic era [14, 15]. The main concern was for the cancer patients living in the rural areas, as there are few cancer centres in the rural / small district places in India. Ours is one of them. Cancer patients from this and the nearby areas were taken care, in fact patients from nearby areas who were taking treatment at bigger cities were also taken care by continuing their chemotherapy cycles and some continued for further management completely. Telephonic consultation was taken whenever required for such patients from the primary treating centre.

In the year 2019, the total new patients' registration was 838 as compared in 2020 only 643 new patients were registered, which was 23.27% less. Patni N et al carried out a systematic qualitative analysis of newly diagnosed and under-treatment patients between 1 June 2020 and 6 July 2020 and found that the cancer diagnosis and treatment were delayed in 25.17% and 61.90%, respectively, due to the ongoing coronavirus pandemic [16]. Almost same

percentage fall in new registrations is observed at our centre. Diagnosis for various cancers was delayed and the elective surgeries were also reduced or were on hold, only emergency surgeries were performed. Head and neck malignancy are one of the leading cancers in India with a total load share of almost one-third of all malignancy cases, amounting to 16% among Indian men and 10% among women [5]. Squamous cell carcinoma represents the most common form of head and neck cancer, and its early approach plays a key role in reducing morbidity and mortality [17]. There is a high viral load in the nasal and oral cavity of infected patients, especially endangering those specialties focused around this region. Besides ear, nose, and throat surgeons and dentists, oral and maxillofacial surgeons especially have to be aware of the new challenges and the risk of virus transmission between patients and medical staff [18,19]. There is a strong agreement not to delay cancer surgery beyond eight weeks, in case of early disease and not beyond four weeks in case of advanced disease. If surgery cannot be done within this time period, alternative therapy (radiotherapy, chemotherapy) should be initiated [20,21]. At our centre, major effect of delayed diagnosis and management was observed in head and neck cancers, though that is the commonest cancer reported in this area. Most of the cases reported in advanced stages of the disease and the probable reason for delay in diagnosis could be because dental services were on hold, biopsy for head neck region is with highest risk of infection as high SARS-CoV-2 virus load in nasal and oral cavity region. After the diagnosis patients were waiting for surgical management and then referred for further Radiation +/- Chemotherapy. During the year a total of 173 patients of head and neck cancers were treated in the department and 35 (20.33%) and 117 (67.63%) were in stage III and IV respectively. We treated more tracheostomy patients with laryngeal and oropharyngeal carcinoma (21 patients) due to diagnosis at advanced stage. Similar problem of delayed diagnosis was observed for lung cancer and upper gastrointestinal malignancies.

Cervical cancer patients were also reported late, but we could give radiation therapy +/- Chemotherapy as per the department protocol

and brachytherapy treatment was also given. Cancer breast patients also reported late and as elective surgeries were on hold, they were given neoadjuvant chemotherapy and were referred for surgery as soon as routine surgeries started. Other diagnostic sites patients were also managed in the similar way.

Delay in treatment and treatment breaks were observed in months of March and April when there was countrywide Lockdown. Patients number was gradually back to normal in months of June and July due to indoor admission facilities given to them till the radiation treatment was over. Again, there was slight decrease in patient number due to un lockdown and increase in SARS-CoV-2 virus infection. There was one-week delay in all the patient's radiation treatment when three of the staff from LA room tested positive at the same time. All the other staff were also quarantined for one week and radiation treatment was kept on hold. During radiation treatment also two of the cases tested positive and the treatment was kept on hold for two weeks and again started when report came negative. Most of the faculties and PG students are residing inside the campus and follow all Institute guidelines and restrictions, none of them tested positive. Staff coming daily from neighbourhood areas, five of them tested positive and were given treatment.

Probability of contracting the lethal Coronavirus infection is overall definitely lower than the advancement of the undiagnosed / unattended cancer. Department could manage the Cancer patient's treatment following guidelines and taking precautions. Patients could complete their treatment with some delay, treatment breaks and modifications in the treatment & follow up protocol. Battle with COVID-19 is still on, as the second wave has already started and hopefully the department will continue with the same preventive protocols in managing cancer patient's treatment with more confidence due to the vaccination of almost all the health care workers.

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