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(RESEARCH ARTICLE)

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Covid-19 pattern in cancer patients-an experience from a tertiary care center of western UP

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Abstract

Many researches are published and still going on for the effects of comorbidities on coronavirus disease 2019 (COVID-19), but large studies on cancer as a risk factor and severity of covid-19 in cancer patients are still lacking. The aim of this study was to see the prevalence of covid- 19 in cancer patients and to observe the pattern of disease course in cancer patients undergoing active treatment. In this study, 50 patients of covid-19 RTPCR confirmed cancer patients were enrolled who visited the department from 1may to September 2020 and were retrospectively analyzed for their disease course. Infectivity rate of 5% was observed while case fatality rate was 12%. Mean age of presentation was 42.9yr with male predominance. Head and neck carcinoma patients were more prone to covid-19.20% patients were symptomatic, who required admission in covid ward. Infectivity rate as well as case fatality rate was higher in cancer patients, especially those taking active cancer treatment and were having other comorbid conditions also. Cancer treatment makes a risk factor for covid-19 infection. Mortality is more in cases having associated comorbidities. Though more prospective randomized trials are needed for any statistical analysis.

Keywords: cancer; covid-19; infectivity rate; case fatality rate

1. Introduction

The COVID-19 pandemic in India is part of the worldwide pandemic of corona virus disease 2019 (COVID-19) caused by severe acute respiratory syndrome corona virus 2 (SARS-CoV-2). On 12 January 2020, the WHO confirmed that a novel corona virus was the cause of a respiratory illness in a cluster of people in Wuhan, Hubei, China, which was reported to the WHO on 31 December 2019[1].

The first case of COVID-19 in India, which originated from China, was reported on 30 January 2020[2]. The per day cases peaked mid-September in India with over 90,000 cases reported per day and have since come down to below 15,000 as of 2021 January[3]. In July 2020, India's Ministry of Information and Broadcasting claimed the country's case fatality rate was among the lowest in the world at 2.41% and "steadily declining"[4].

The outbreak has been declared an epidemic in more than a dozen states and union territories, where provisions of the Epidemic Diseases Act, 1897 have been invoked, leading to the temporary closure of educational and commercial establishments [5].

Older adults and people of any age who have underlying medical conditions, such as hypertension and diabetes, have shown worse prognosis [6]. Many studies have shown severity of covid -19 in associated with cancer, so in the COVID-19 crisis, cancer patients are regarded as a highly vulnerable group. A recent investigation of 18 patients who had been previously diagnosed with cancer, from a nationwide cohort of 2007 COVID-19 cases, found that patients with cancer

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had a higher risk of severe clinical events than those without cancer [7]. The case fatality rate reached 5.6% among cancer patients compared with 2.3% in the general population [8].

Cancer itself can affect the immune system by spreading into the bone marrow [9]. Therefore, people with a weak immune system have a higher risk of experiencing frequent infections and are more likely to get COVID-19. Studies show that COVID-19 increases complications and the overall risk of death in patients with cancer compared to the general population, patients with cancer have a 3-fold vulnerability to death due to COVID-19 because their immune system can be weakened by cancer and its treatments [10].

We hereby conducted a retrospective analysis of cancer patients visiting our department who developed covid-19 during treatment.

Aim and objective

The aim of this study was to assess the prevalence and severity of covid-19 in cancer patients.

2. Material and method

We enrolled total 50 patients for this analysis who presented in our department for treatment from 1st May 2020 to 30th September 2020. Total approximately 1000 patients visited in department during this period, excluding repeated visit of a single patient. As per our departmental protocol covid 19 RTPCR is mandatory before initiation of any treatment (chemotherapy or radiotherapy) and this covid-19 RTPCR had to be repeated every two weekly for admission and for patients undergoing radiation therapy. Apart from this symptomatic patients underwent sampling as per requirement.

Patient's demographic data was taken from individual case files like name, age, sex, site of the malignancy and initiation of symptoms, types of symptoms and date of the sampling on which patient became positive and date on which the patient became covid negative.

3. Results

Table 1 Patients distribution as per age.

AGE (yrs.)	NO OF PATIENTS
1-10	1(2%)
11-20	2(4%)
21-30	3(6%)
31-40	14(28%)
41-50	18(36%)
51-60	7(14%)
61-70	4(8%)
71-80	1(2%)
81-90	0(0%)
total	50

Maximum no. of patients were between 31-50 age groups. Average age of presentation was 42.96 yrs.

Table 2 Distribution of patients as per gender

Gender	No of pts.
Male	34(68%)
Female	16(32%)

Male and female ratio was approx. 2:1.

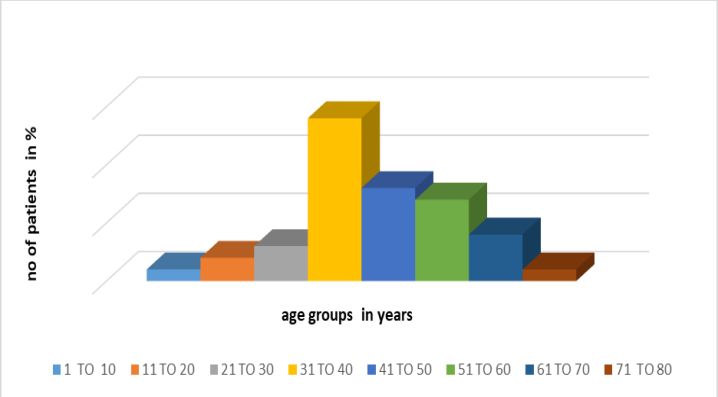

Figure 1 Graphic presentation of age wise distribution of patients

Table 3 Distributions of patients as per associated co- morbid conditions.

No of patients	DM	COPD/TB	HTN	DM + HTN	Other immunocompromised status
	0	1	1	2	1

Only 10 % patients were having other co-morbid conditions

Table 4 Distribution of patients as per types of malignancy.

Type of malignancy	No of pts.
Solid	48(96%)
haematological	2(4%)

Maximum no. (96%) of patients were of solid malignancy

Table 5 Distribution of patients as per site of solid malignancies.

Site of malignancy	No.of pts.
Ca breast	6 (12.5%)
Ca alveolus	2(4.16%)
Ca lung	1(2.08%)
Ca larynx	5(10.41%)
Ca gall bladder	3(6.25%)
Ca cervix	2(4.16%)
Ca esophagus	7(14.58%)
Ca anorectum	1(2.08%)
Ca tonsil	1(2.08%)
Ca BOT	6(12.5%)
CA soft palate	1(2.08%)
Ca BM	9(18.75%)
CA tongue	2(4.16%)
Ca maxilla	1(2.08%)
Malignant melanoma	1(2.08%)

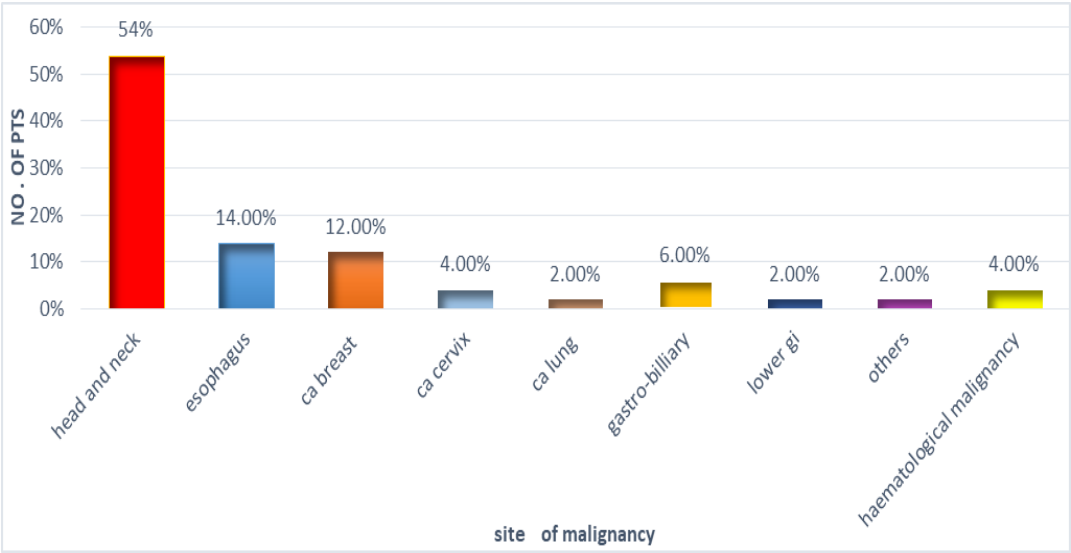

Figure 2 Distribution of patients as per site of malignancies.

Out of solid tumors, head and neck malignancy patients constituted majority that is 54% (27 pts.), followed by ca esophagus patients**.**

Table 6 Distribution of patients as per symptomatology.

Symptomatic patients who required admission in Covid ward	**Home isolation (asymptomatic patients)**
10(20%)	40(80%)

Most of patients were asymptomatic in terms of covid-19 symptomatology so were kept on home isolation .Only 20 % patients were having symptoms who required admission in covid ward. Most common symptoms were cough and breathlessness**.**

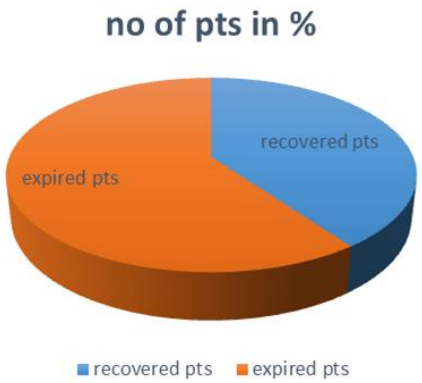

Figure 3 Covid cancer indoor patients Status

Out of admitted patients, 60% patients expired during treatment while 40% recovered and resumed their treatment. Out of expired patients, 4patients (66.67%) were on chemotherapy, 1 patient (16.66%) was on radiotherapy and 1 patient (16.67%) was on follow-up. Out of total 50 patients, 6 patients expired, so case fatality ratio was 12%. While infectictivity ratio in cancer patients was 5%.

Total 4(8%) patients got re-infected with covid -19

Table 7 Distribution of patients as per treatment.

patients	chemotherapy	radiation	follow up
Indoor patients(8)	5(10%)	4(8%)	1(2%)
Outdoor patients(42)	22(44%)	8(16%)	10(20%)
Total pts. (50)	27(54%)	12(24%)	11(22%)

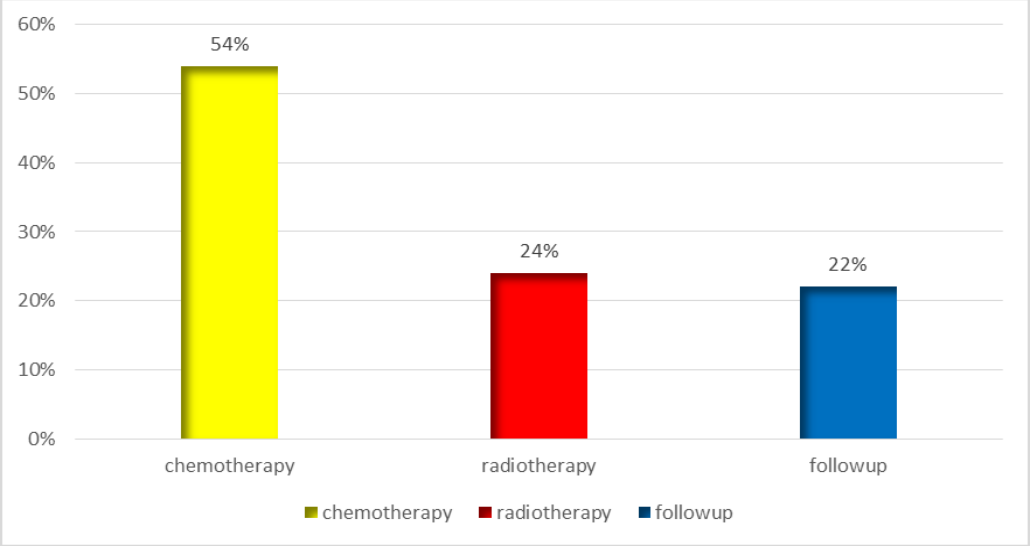

Figure 4 Distribution of patients as per on treatment modality

Maximum no of patients (54%) were on chemotherapy followed by radiotherapy.

Table 8 Showing changes in blood pictures - post covid.

Blood picture	No of pts.
thrombocytopenia	39(78%)
thrombocytosis	7(14%)
No change in platelets	1(2%)
Unknown status	3(6%)
Leucocytosis	22(44%)
leukopenia	25(50%)
No change in WBC	0(0%)
Unknown status for WBC	3(6%)

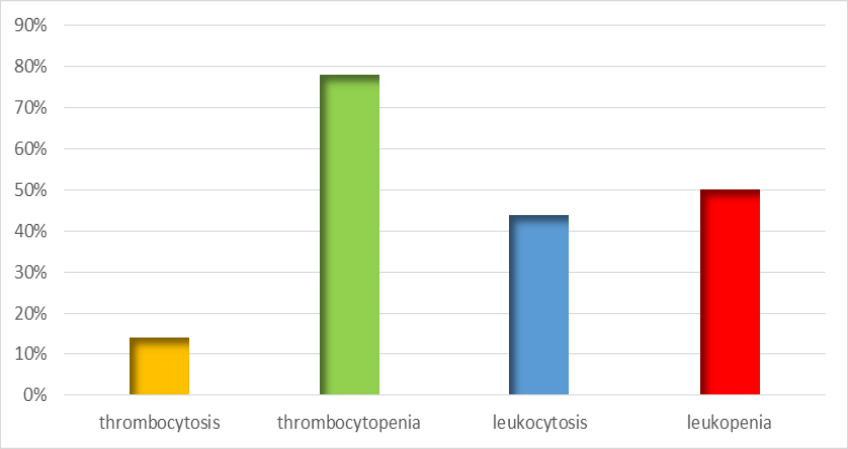

Figure 5 Post-covid blood profile

Thrombocytopenia was seen in maximum patients while leukopenia and leukocytosis were approximately similar.

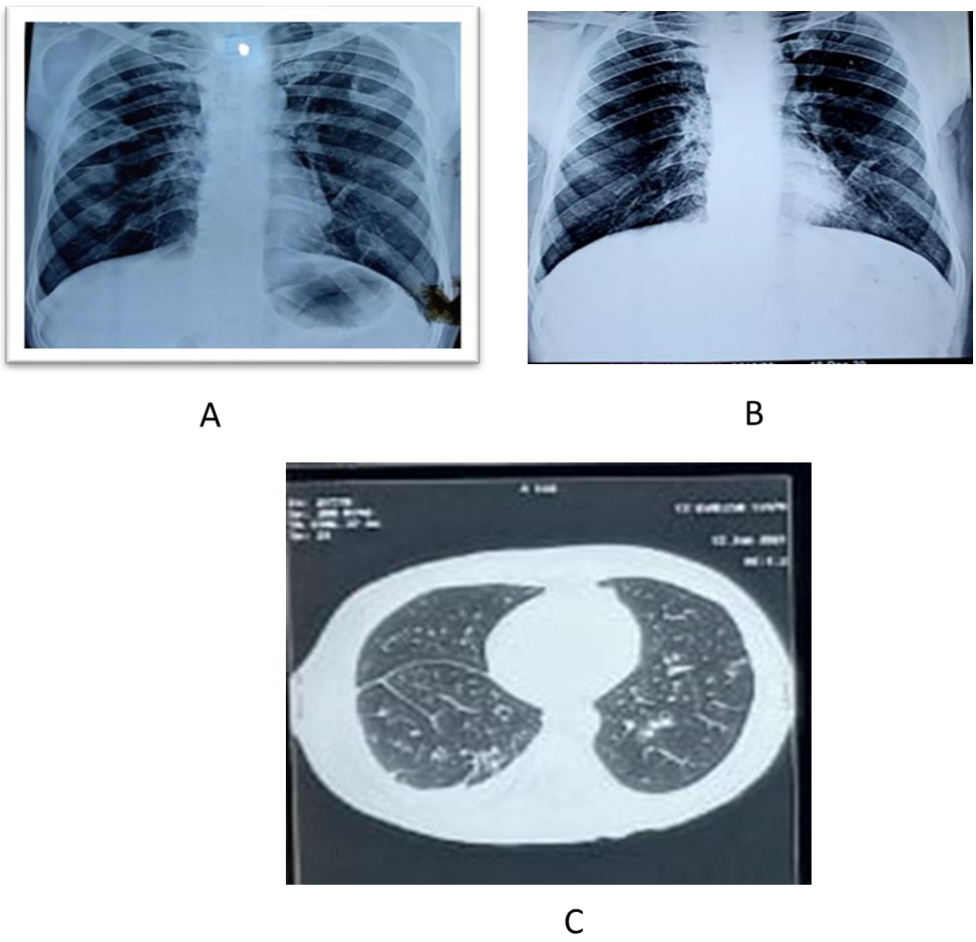

Figure 6 A-Pre-covid X-Ray chest (PA) status; B- Post-covid X-Ray chest (PA) status and C- Post-covid CECT scan chest status

There were mild to moderate changes seen radiologically in recovered patients.

4. Discussion

No large published data is currently available from the developing countries with regard to the association of comorbidities to mortality.

Manoj Saluja et all collected and analyzed the data of 406 patients admitted in COVID 19 isolation wards and observed an average age of 36 ± 15 years and a male predominance (2:1)[11].In our study also, maximum no. of patients were between 31-50 age groups (64%) and average age of presentation was 42.96 yrs. Similarly in our study M: F was 2:1.

Emerging data clearly suggests, that associated comorbidities such as hypertension, diabetes, obesity, cardiovascular disease (CVD), cerebrovascular accident (CVA), chronic obstructive pulmonary disease (COPD), asthma, chronic kidney disease (CKD) and malignancy are often associated with increase in severity and or mortality in patients with COVID-19.There were various studies done showing prevalence of comorbidities in patients with COVID-19 across the world. Diabetes was the leading comorbidity present in deceased COVID-19 individuals from India.

A retrospective analysis of 355 patients who died after SARS-CoV-2 infection in Italy revealed that 36% had diabetes, 30% had ischemic heart disease, and 25% had active cancer, whereas only 0.8% had no disease [12].A similar analysis by Trapani et al. on 909 patients who died from COVID-19 in Italy revealed that 17% were patients with cancer, which includes both cured and active cancer treatment recipients [13]. A retrospective analysis of 1878 COVID-19 patients who visited a hospital in Madrid revealed that 2.4% were cancer patients, out of which 37.7% had lung cancer.

Grasselli et al.concluded that 7.8% were having cancer as a comorbidity out of 104 covid patients [14]. There was a wide variation seen in western and Asian countries justifying cancer as a comorbid condition. In our study we found infectivity rate of 5% in cancer patients visiting the department, which was approximately, two times the general public infectivity rate. M.Khan et al in their study of 845 patients concluded that male and older population had a significantly higher positive rate. Of the 121 patients infected with SARS-CoV-2, the mean age was 43.19 years (SD, 17.57) and the infections were more frequent among male gender accounting for 85 (70.25 %) patients [15]. In our study also mean age of presentation was 42.9 yrs.

The largest Chinese data found significantly increased case-fatality rate (CFR) in presence of any comorbidity. Although overall CFR was 2.3% for overall population (N = 44,672), the presence of comorbidities such as CVD, diabetes, COPD, hypertension and cancer increases the CFR to 10.5%, 7.3%, 6.3%, 6.0%, and 5.6% respectively[8].

Multiple studies from different geographical locations show that the case fatality rate (CFR) of the SARS-CoV-2 infected cancer patients varies from 3.7% to 61.5% (25-28).Case fatality rates in our cases was 12% [16,17].

Our maximum no of patients, who developed covid were of head and neck malignancy (54%).80% of our covid patients. were asymptomatic and recovered in home isolation only. In our study 78% patients were on active cancer treatment, out of which 54% patients were on chemotherapy treatment thus correlating with immunosuppression as a risk factor for covid -19.

5. Conclusion

Covid -19 prevalence was seen more in cancer patients as compared to general public sample positivity rate of that time Case fatality is more in patients who were on active cancer treatment particularly on chemotherapy and were having additional comorbid conditions.

Limitation

This was a retrospective study with less no.of patients so further prospective randomized study is required with enrollment of more number of patients for any stastical analysis. Due to less no.of patients, direct comparison of comorbidities could not be done.

Compliance with ethical standards

Disclosure of conflict of interest

There is no conflict of interest

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