

Covid 19 Infection in Cancer Patients: An Institutional Study

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Abstract

Covid 19 emerged as a third pandemic from the corona virus family in this era. The first case was seen around in December 2019 in China and soon it spread to multiple nations and was declared a pandemic on 11th march 2020 by WHO. Cancer patients are more susceptible to infections due to already impaired immune system and tumor load. Around 1500 patients infected with covid 19 admitted at our institute which is a tertiary care centre, of which 8 patients had cancer. The demographic, clinical and hematological data was collected and using descriptive analysis inferences were drawn. Most common malignancy was found to be carcinoma buccal mucosa. One of the most common hematological features was anemia and lymphopenia. Most of the patients were asymptomatic and visited hospital for routine pre operative check up and were found covid 19 positive.

Keywords: Covid 19; Cancer incidence.

Introduction

The first case of corona virus disease 19 (covid 19) was reported in Wuhan, China in December 2019.⁴ Since then the world has seen almost 7300000 laboratory confirmed cases of covid 19. The number of deaths occurred worldwide are around 4, 30,000. India reported its first case of Covid 19 on 30th January 2020 and soon it became a public health emergency of national concern. On 11th march 2020 it was declared a pandemic by WHO. After SARS-CoV and Middle East respiratory syndrome corona virus (MERS-CoV) it is the third virus from corona virus family which has resulted into a pandemic. The symptoms of Covid 19 range from self resolving cough to life threatening severe pneumonia. Person to person transmission of the virus was reported in a China.^{5,6}

In this health crisis of covid 19, pre existing co morbidities such as hypertension and diabetes

contribute significantly to the mortality of patients. Patients with malignancies are considered to be more susceptible to infections. This may be due to their impaired immunity. So far there are no reports describing severe clinical characteristics of covid 19 in cancer patient. With this study we are describing the clinical and pathological characteristics of cancer patients infected with covid 19.

Methodology and study design

Between 15 April 2020 to 15 May 2020, 791 confirmed cases of covid 19 were admitted at our institute. For this study we included all the hospitalized covid 19 patients with history of malignancy. Their diagnosis was confirmed using RT PCR and radiological x ray imaging Table 1. Clinical features were collected through a data base that included demographic data, pre existing medical conditions, status of cancer and previous cancer







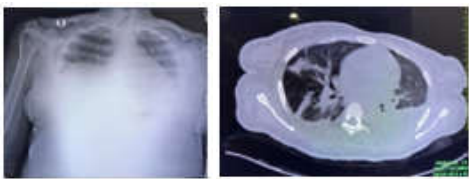

treatment Table 4. Clinical and hematological data on admission were recorded including requirement of oxygen support and ICU care.

Descriptive and inferential statistics were used.

Result

We retrospectively selected 8 (0.53%) patients with cancer of 1500 patients admitted between 25 March 2020 to 15 May 2020 at our institute for quarantine and treatment. Table 1

Table 1: X-ray images of cancer patients with covid 19 infection

Patient 1	Ca Rt Buccal Mucosa	
Patient 2	Ca Rt Buccal Mucosa post NACT	
Patient 3	Pituitary Adenoma	
Patient 4	Ca Right Buccal Mucosa with lung metastasis	
Patient 5	Ca Right Buccal Mucosa	
Patient 6	Rec. Ca Tongue	
Patient 7	Ca Ovary With ascitis	
Patient 8	Ca Endometrium	

Demography and clinical characteristics Table 2

The median age was 37.5 (28-65) years; 5(62.5%) of them were males. All the eight patients were local residents. History of travel was found in 2(25%) and history of contact could be traced in 3(37.5%).

In our study there were two main clusters of patients Table 2: those who were asymptomatic and were found to be covid 19 positive while undergoing routine pre operative investigation. There were 4(50%) of such patients. And the others, 4(50%) were symptomatic. The most common presenting symptom was cough and fatigue (n=3, 37.5%); sore throat (n= 2,25%); fever (n=1, 12.5%); shortness of breath (n=2, 25%); chest pain in 1(12.5%). 2(25%) had respiratory rate > 30 and tachycardia > 120/min. None of the patients had any complaints of nausea or vomiting.

The patients also had some pre existing medical conditions apart from malignancy. The most common was diabetes mellitus 2(25%) followed by hypothyroidism 1(12.5%). 1(12.5%) had hypertension.

Table 2: Demography and clinical characteristics

Total Patients (25 th March - 15 th May 2020)	1500
Cancer patients	8 (1.01%)
Median Age	37.5 years (28-65 years)
Male	5 (62.5%)
Contact History	3 (37.5%)
Nosocomial Transmission	3 (37.5%)
Travel History	2 (25%)
Presence of Symptoms	4 (50%)
Fever	1 (12.5%)
Cough	3 (37.5%)
Sore Throat	2 (25%)
Shortness of Breath	2 (25%)
Fatigue/Myalgia	3 (37.5%)
Diarrhoea/Vomiting	None
HTN	1 (12.5%)
T2DM	2 (25%)
Hypothyroidism	1 (12.5%)
Routine screening after multiple hospital visits	4 (50%)
Death	None

Hematological findings Table 3

The blood count result showed anemia in 7(87.5%) patients, with mean hemoglobin 11.2(7.9-15.2). The mean leucocytes count was 10300 (3800-19700), of which leucopenia was seen in 1(12.5%) patient, leucocytosis in 2(25%) patients. The mean platelet count was 3.8 lacs (1.28-6.88 lac), out of which thrombocytopenia was seen in 1(12.5%) and

thrombocytosis in 1(12.5%). The mean lymphocyte % was found to be 20% (7% to 28%), lymphopenia was seen in 4(50%) patients.

Table 3: Hematological characteristics

Hemoglobin	11.2 (7.9-15.2)
Platelet	3.8(1.28-8.66)
TLC	10300(3800-19700)
Lymphocytes	20%(7%-28%)
Lymphopenia	50%
Thrombocytosis	12.5%
Thrombocytopenia	12.5%

Treatment details Table 4

All the 8(100%) patients were given Hydroxychloroquine from day 1 to day 5 along with azithromycin 500 mg. The hospital stay of 6(75%) patients were uneventful. 2(25%) patients required oxygen therapy. 1(12.5%) patients with progressive hypoxia, was shifted to intensive care unit and taken on Bipap support was eventually weaned off after improvement of health. Systemic corticosteroid was administered in 2(25%) patients. None of the patients selected for this study resulted in mortality. All the patients were discharged after their negative covid 19 status. 100% showed improvement in their condition.

Table 4: Treatment details

Hydroxychloroquine	8 (100%)
Azithromycin	8 (100%)
Systemic Corticosteroid	2 (25%)
Oxygen support	2 (25%)
NIV	1 (12.5%)
ICU	1 (12.5%)

Pre-existing malignant conditions and treatment details Table 5

All the reported cancer patients were of solid malignancy. Among the malignancy carcinoma buccal mucosa was the most common malignancy (n=4, 50%). 1(12.5%) case of endometrial carcinoma, 1(12.5%) case of pituitary adenoma, 1(12.5%) case of carcinoma tongue, 1(12.5%) case of ovarian carcinoma. Out of these 2(25%) cases were of metastatic disease.

Our study group could be subdivided into two groups of patients who had received prior treatment for cancer and those who did not. 4(50%) of them had received prior treatment in single or multimodality form. 3(37.5%) patients underwent surgery, 3(37.5%) patients received chemotherapy,

3(37.5%) received radiotherapy, 1(12.5%) received neo adjuvant chemotherapy. 3(37.5%) had received concurrent chemoradiation.

Table 5: Malignancy and treatment

Carcinoma Buccal Mucosa	4(50%)
Carcinoma Endometrium	1(12.5%)
Carcinoma Ovary	1(12.5%)
Carcinoma Tongue	1(12.5%)
Pituitary Adenoma	1(12.5%)
Solid Tumours	8(100%)
Presence of Metastasis	2(25%)
Post OP	3(37.5%)
Post RT	3(37.5%)
Post CT	3(37.5%)
NACT	1(12.5%)

Discussion

With this study, we have reported the clinical and hematological features in cancer patients infected with COVID 19. Table 6, 7

Table 6:

	Present study	Indian General Population (Bhandari et al.)	Cancer patients in China (Zhang et al.)
Age	37.5	35.4(Mean)	65
Sex	62.5%	60.9%	60.7%
Symptomatic	50%	24.32%	—
Fever	12.5%	55.9%	82.1%
Cough	37.5%	52.7%	78.6%
SOB	12.5%	46.45%	50%
Sore Throat	25%	49.6%	—
T2DM	25%	39.72%	14.3%
HTN	12.5%	42.46%	14.3%
Oxygen support	25%	—	78.6%
Source of Infection			
Community	62.5%	—	71.4%
Nosocomial	37.5%	—	28.6%

Table 7: Type of malignancy

	Present study	Zhang et al.
Solid tumor	100%	100%
Most Common	Carcinoma Buccal Mucosa (50%)	Carcinoma Lung (25%)
Ovarian carcinoma	12.5%	3.6%
Endometrial Carcinoma	12.5%	3.6%
Post operative patients	37.5%	75%
Post CT/RT	37.5%	89.5%
Systemic corticosteroids	25%	53.6%

The general characteristics such as age and sex in cancer patients infected with covid are similar to that of general population as reported in a study of SMS Jaipur² but it was different from that what was reported by Zhang et al.³ The mean of age of patients in our study was 37.5 years whereas Zhang et al reported it to be 65 years. The most common symptom in our study cohort was cough, whereas fever was found as the most common symptom in other studies.^{2,3}

Interestingly, 50% of our study cohort patient was asymptomatic and on contact tracing all of them had history of multiple hospital visits for other reasons which may indicate the nosocomial transmission³ of COVID-19 amongst cancer patients.

Diabetes was found to be the most common co morbidity in our study group which also differs from that of general population and Zhang et al. where the most common co morbidity was hypertension.

Solid tumors are found to have preponderance in SARS COV-2³ as opposed to hematological malignancies being more commonly found in MERS.¹ And the most common malignancy as per our study is carcinoma buccal mucosa where in the study reported by zhang et al. it was lung cancer.³

Our study concludes that cancer patients do not present with any exceptional epidemiological and clinical characteristics when infected with COVID-19. Also presence of cancer does not seem to have any implications on severity of the disease.

The most common comorbidity among the cases of our study was diabetes where as zhang et al. and Jaipur study both reported it to be hypertension.^{2,3}

There were zero mortalities in our study which could be the result of small sample size and single institutional study and hence a multi centric study with large number of patients is needed.

Limitations

1. The study population only included patients within one tertiary hospital of Central India.
2. The retrospective nature of the study design.
3. Our study does not account for any asymptomatic undiagnosed infection or any patients who died without a confirmed diagnosis.
4. Our study lacks follow-up data of the patients.
5. Our study cohort represents the milder spectrum of the covid disease.

6. One of the limitation of our study is smaller sample size single and hence to be able to draw results regarding the mortality amongst cancer patients infected with covid 19 a multi centric study with larger sample size is required.

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