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1744P COVID-19 in cancer patients: Risk factors for the development of severe clinical event (SCE)

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Background: Some studies have suggested a higher risk of respiratory complications related to COVID-19 (C-19) in cancer patients (pts), but there is a lack of knowledge concerning the outcomes and prognostic factors. We evaluated whether various factors can predict a more serious C-19 infection.

Methods: We conducted a retrospective study including 51 pts diagnosed of C-19 between March 10 and April 7, 2020. All pts present tumor disease at diagnosis of C-19: advanced disease, neoadjuvant treatment (ttm) or maintenance ttm after definitive chemoradiotherapy. It has been evaluated whether certain factors may present an increased risk for the development of a SCE, defined as death, the need of high oxygen flow (FiO2>50%), non-invasive or invasive mechanical ventilation or Intensive Care Unit admission. These factors have been age, ECOG, ttm line, type of ttm, time from last ttm to C-19 diagnosis, smoke, hypertension, diabetes mellitus, chronic obstructive pulmonary disease, cardiopathy, body mass index, fever, cough, dyspnea, myalgia, gastrointestinal symptoms, infiltrates in chest radiography, CURB65 ≥1, creatine phosphokinase, lactate dehydrogenase and D-Dimer elevated, lymphopenia and PaO2/FiO2 <300 mmHg.

Results: At the time of the data cut-off on May 16 2020, we have collected 51 cancer pts. Most of them were men (61%) with a median age of 68 years (range 19-86). Lung cancer was the most frequent type of cancer (22%), and the most common ttm was chemotherapy (51%). Eighteen pts (35%) developed a SCE, with 13 deaths (25%). Only dyspnea and PaO2/FiO2 <300 mmHg showed an increased risk to develop a SCE.

Table: 1744P

	Odds ratio (95% CI)	p	Hazard ratio for SCE (95% CI)	p
Dyspnea	5.2 (1.47-18.33)	0.01	3.22 (1.09-9.48)	0.034
PaO2/FiO2 <300 mmHg	8.8 (2.23-33.71)	0.002	3.7 (1.34-10.24)	0.012

Conclusions: Despite our retrospective analysis and the limited number of pts, we conclude that advanced cancer pts receiving antitumoral ttm have a higher risk for the development of SCE when considering the presence of PaO2/FiO2 <300 mmHg and dyspnea on admission. Therefore, it is crucial to screen for C-19 infection in any cancer patient who reports dyspnea, given the potential risk of poor evolution.

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1745P SARS-CoV-2 infects metabolically-primed epithelial cells in lung cancer models

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Background: The novel coronavirus SARS-CoV-2 is the cause of the respiratory illness COVID-19—a global pandemic affecting over 4 million individuals worldwide. Viruses

efficiently replicate by hijacking host cell machinery to obtain macromolecules and energy by similar mechanisms as cancer cells. Since viral infection is known to alter cellular nutrient requirements, this study explores the metabolites and metabolic pathways associated with SARS-CoV-2 infection.

Methods: Bulk and single-cell sequencing data from cell lines and tumor samples were retrieved from publically available datasets. Transcriptional data were retrieved from publically available datasets of gefitinib- and erlotinib-resistant EGFR-mutant cell lines and Calu3 and A549 cells mock treated or infected with SARS-CoV-2. Single-cell RNAseq datasets of EGFR-mutant PC-9 mock and osimertinib treated were downloaded from GEO. 225 metabolites were profiled in CCLE cell lines using LC-MS.

Results: To identify metabolic features of cells able to be infected by SARS-CoV-2 via the ACE2 receptor, metabolites associated with ACE2 expression were investigated. ACE2 expression positively correlates with glutamine in upper aerodigestive tract cell lines. Consistent with this, ACE2 expression was examined against a list of 253 metabolism-associated genes and *GLUL*, which encodes an enzyme (glutamine synthetase) responsible for conversion of glutamate to glutamine, was significantly positively correlated in NSCLC, HNSCC, and SCLC cell lines and confirmed in human tumor datasets. Additionally, *GLS*, which encodes the enzyme (glutaminase) that catalyzes the opposing reaction, is negatively correlated with ACE2 expression. Further, we analyzed RNA sequencing data from NSCLC cell lines infected with SARS-CoV-2 for 24 hours and revealed that upon infection there is a down regulation of *GLUL* signifying a metabolic-shift away from glutamine as the cells undergo EMT.

Conclusions: We show that SARS-CoV-2 targeting of ACE-2 expressing, metabolically-primed epithelial cells is advantageous to exploit the abundance of glutamine to synthesize nucleotides for rapid replication and viral spread.

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1746P Impact of PD-1/PD-L1 blockade therapy in COVID-19 infected cancer patients (pts) hospitalization: Results of an Italian study in the province of Modena and Reggio Emilia during SARS-CoV-2 outbreak

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Background: Higher incidence of severe events in cancer pts affected by COVID-19 have been reported. However, the association with oncological treatments is not clear yet. Recommendations have been released by Italian scientific society and colleges (AIOM, CIPOMO, COMU) according to the risk of infection and tumor characteristics, suggesting telephone consultations and, if suitable, treatments delay.

Methods: In Modena and Reggio Emilia Cancer Centers, previous Ethical Committee approval, medical reports of pts undertaking immunotherapy between January 1st - April 30th 2020 were collected. According to WHO indications COVID-19 infection was identified by thoracic CT scan and RT-PCR of nasopharyngeal specimens. For those pts we estimated the risk of infection and complications that lead to hospitalization.

Table: 1746P

Site primary tumor/Lung metastasis	Age (ys)	Gender	1 st Line Regimens	Smoker (Never = N Former = F)	Hospitalization (days)	Pulmonary infection involvement (%)	Death
Colon/no	40	Female	Atezolizumab FOLFOXIRI Bevacizumab	N	16	20-40	No
Kidney/yes	76	Male	Nivolumab Ipilimumab	N	14	10	Yes
Pleura/yes	65	Male	Pembrolizumab Cisplatin Pemetrexed	F	65	10	No

Results: A total of 337 pts with solid tumors treated with anti-PD1/PDL-1 antibody regardless the line of treatment was identified. Cancer diagnosis included 156 (46,3%) lung, 74 (22%) melanoma, 36 (10,7%) kidney, 23 (7%) colorectal, 12 (3,4%) head and neck, 36 (10,6%) miscellaneous. Only 3 pts (0,9%), with advanced disease and in first line therapy were hospitalized for COVID-19 (Table). The onset symptom was fever in 2 pts, and subjective dyspnea in 1 pt. Subsequently, they develop respiratory distress and underwent to non-invasive assisted ventilation, receiving hydroxychloroquine, steroids, low molecular weight heparin. Tocilizumab was administered in 1 pt due to progressive increase of serum IL-6 values. Nobody was admitted in Intensive Care Unit. Since the last update, May 15th 2020, 1 pt died; the others have recovered with negative nasopharyngeal swab.

Conclusions: Although not conclusive, in our series, cancer pts infected by COVID-19 receiving immunotherapy do not appear to be exposed to greater risk of recovery.

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1747P Chemotherapy prescriptions and emergency medical care utilization by patients in neo/adjuvant breast cancer treatment during COVID-19 pandemic: Patterns in a Brazilian University Hospital

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Background: Cancer treatment during COVID-19 pandemic has been mainly focused on safety, and prioritization has been done to guide hierarchically choices according to clinical benefits considering resource scarcity. Considering the magnitude of benefit, neo/adjuvant breast cancer treatment is positioned at medium/high levels. Despite these recommendations, patients might be refusing chemotherapy or avoiding emergency care utilization because of COVID-19 infection concerns. A better understanding of the impact of the pandemic on breast cancer chemotherapy prescription patterns and demand for emergency care can support strategies to minimize unfavorable outcomes.

Methods: Medical records from 299 breast cancer patients who started neo/adjuvant chemotherapy from January/2018 at the Hospital das Clínicas de Ribeirão Preto – USP (HCRP-USP) were retrospectively analyzed, with a total of 2,003 cycles. Clinical data, treatment information and outcomes were collected; COVID-19 pandemic period (CPP) (Mar/2020-Apr/2020) was compared to pre-pandemic period (PPP) (Jan/2018-Feb/2020).

Results: The mean number of neo/adjuvant chemotherapy cycles prescribed monthly and the mean number of treatments initiated monthly during CPP, respectively, 76 (± 9) and 10.5 (± 2.1) were similar to PPP, respectively, 77 (±12; *p*= 1) and 10.7 (±3.5; *p*=0.94). An average of 6.0% (± 1.6%) of the patients who received chemotherapy sought emergency care monthly during CPP compared to 10.9% (± 3.8%, *p*=0.07) before the pandemic.

Conclusions: According to ESMO recommendation, neo/adjuvant breast cancer treatments have been prioritized considering its curative benefit. During COVID-19 pandemic there seems to be no compromising in patient acceptance or medical recommendations at our institution. On the other hand, there was a trend to decrease the attendance in the emergency units, what could compromise treatment safety. Telemedicine and continuous monitoring could minimize unfavorable outcomes. Further analyzes to correlate the impact of the pandemic on the safety and efficacy of the treatment in this population will be completed soon.

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1748P Real-world outcomes in thoracic cancer patients (pts) with severe acute respiratory syndrome coronavirus 2 (COVID-19): Single UK institution experience

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Background: Globally, United Kingdom (UK) has the second highest mortality rate from COVID-19. Risk factors include cancer and lung disease; thus thoracic cancer pts are especially vulnerable.

Methods: Thoracic cancer pts diagnosed with COVID-19 (PCR, radiological or clinical) at a UK academic centre between March-May 2020 were included. Data were extracted from pts records. Demographics, treatment and outcomes are described.

Results: 27 pts were included, 12 (44%) diagnosed by PCR, 4 (15%) radiologically and 11 (41%) clinically. 89% had advanced thoracic malignancies. Symptoms included dyspnoea (52%), cough (67%), fever (59%), fatigue (37%), confusion (22%), diarrhoea (11%), anosmia (7%). 14 (52%) patients were hospitalised (median 6d); 4 (15%) required intensive care (ICU), of which 3 died. 10 (37%) pts required oxygen, 4 (14%) required non invasive ventilation. No pts were intubated. Complications included pneumonia (26%), sepsis (11%) and ARDS (7%). 2 pts required home oxygen at discharge. 5 (19%) pts died; all were smokers. Median time from symptom onset to death was 10d (range 3-13). Cancer therapy was delayed or ceased in 11 (41%) patients.

Table: 1748P Demographics		
	Total n (%) N=27	Died n (%) N=5
Age		
Median (years)	71	73
Sex		
Male	16 (59)	4 (80)
Female	11 (41)	1 (20)
Ethnicity		
White	23 (85)	4 (80)
Other	4 (15)	1 (20)
Smoking		
Never	6 (22)	0
Ex/current	21 (78)	5 (100)
ECOG		
0-2	27 (100)	5 (100)
Comorbidities		
COPD	9 (33)	2 (40)
Cardiac	4 (15)	2 (40)
Diabetes	3 (11)	0
Medication		
Steroids	4 (15)	1 (20)
Cancer type		
NSCLC	22 (81)	3 (60)
SCLC	1 (4)	0
Mesothelioma	2 (7)	1 (20)
Thymoma/Thymic	2 (7)	1 (20)
Current stage		
1-2	3 (11)	1 (20)
3-4	24 (89)	4 (80)
Current treatment		
None	8 (30)	2 (40)
Immunotherapy	2 (7)	0
Chemotherapy	4 (15)	2 (40)
Chemoimmunotherapy	7 (26)	1 (20)
TKI	5 (18)	0
Radiation	1 (4)	0

Conclusions: Despite UK patient shielding and risk-minimizing therapy modifications, the immediate morbidity from COVID-19 remains high in thoracic cancer pts. Rates of hospitalisation and treatment interruption were high. Although numbers were small, no deaths occurred in never smokers or pts on single modality therapy. Continued follow up is needed to better understand the direct and indirect impacts of COVID-19 on morbidity and subsequent mortality.

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