RESEARCH LETTER

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COVID-19 incidence and outcomes among patients with respiratory symptoms in a cancer center emergency department

Incidência e desfechos de COVID-19 entre pacientes com sintomas respiratórios em um departamento de emergência de centro oncológico

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ABSTRACT

Objective: Severe acute respiratory syndrome coronavirus-2 (SARS-COV-2) is a novel coronavirus identified in December 2019 in Wuhan, China. There is limited data on coronavirus disease-2019 (COVID-19) in patients with solid and hematologic malignancies, and the incidence of SARS-COV-2 in cancer patients with respiratory symptoms is not characterized. We report on the incidence and clinical course of COVID-19 among patients with respiratory symptoms presenting to a cancer center emergency department. **Methods:** We retrospectively reviewed medical records of 24 patients with a diagnosis of solid cancer and hematologic malignancies who presented to the ED with respiratory symptoms at the Centro de Oncologia e Hematologia Einstein Familia Dayan-Daycoval (São Paulo, Brazil) from March 13 to March, 29, 2020. **Results:** Eleven patients (46%) had solid cancer, and the remaining 13 (54%) had hematologic malignancies Detected viruses: SARS-COV-2 (n=3 patients, 12%), rhinovirus (n=3, 12%), coronavirus LN67 (n=2, 8%), parainfluenza (n=2, 8%), metapneumovirus, influenza A H1N1, and respiratory syncytial virus (n=1 each, 4%). One patient tested positive for both influenza A H1N1 and SARS-COV-2. All 3 cases of COVID-19 occured in patients with hematologic malignancies – none on active treatment **Conclusion:** Our study highlights the importance of considering alternate diagnosis during the initial pandemic, as only 12% of patients presenting to the emergency department with respiratory symptoms compatible with COVID-19 tested positive for SARS-COV-2. Ongoing studies are needed to assess the likelihood of SARS-CoV-2 infection in patients with solid and hematologic malignancies presenting with respiratory symptoms.

Keywords: Cancer Symptoms; Viral Envelope Proteins; Signs and Symptoms; Respiratory.

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Abbreviations: COVID-19 = coronavirus disease-2019, ED = emergency department, LGL = large granular lymphocyte leukemia, MM = multiple myeloma, SARS-COV-2 = Severe acute respiratory syndrome coronavirus-2
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RESUMO

Objetivo: O novo coronavírus denominado SARS-COV-2, causador da doença COVID-19, foi identificado em dezembro de 2019 em Wuhan, China. Existem dados limitados sobre a COVID-19 em pacientes com malignidades sólidas e hematológicas, e a incidência de SARS-COV-2 em pacientes com câncer com sintomas respiratórios não é caracterizada. Nós relatamos a incidência e o curso clínico de COVID-19 entre pacientes com sintomas respiratórios que se apresentam ao serviço de emergência de um centro oncológico. **Métodos:** Revisamos retrospectivamente os prontuários de 24 pacientes com diagnóstico de câncer sólido e malignidades hematológicas que se apresentaram ao pronto atendimento do Centro de Oncologia e Hematologia Einstein Família Dayan-Daycoval (São Paulo, Brasil) com sintomas respiratórios, de 13 a 29 de março de 2020. **Resultados:** Onze pacientes (46%) tinham câncer sólido e os 13 (54%) restantes tinham neoplasias hematológicas. Vírus detectados: SARS-COV-2 (n = 3 pacientes, 12%); rinovírus (n = 3, 12%); coronavírus LN67 (n = 2, 8%); parainfluenza (n = 2, 8%); metapneumovírus, infuenza A H1N1, e vírus sincicial respiratório (n = 1 cada, 4%). Um paciente testou positivo para influenza A H1N1 e SARS-COV-2. Todos os 3 casos de COVID-19 ocorreram em pacientes com neoplasias hematológicas - nenhum em tratamento ativo. **Conclusão:** Nosso estudo destaca a importância de considerar diagnóstico alternativo durante a pandemia inicial, já que apenas 12% dos pacientes comparecem ao pronto-socorro com sintomas respiratórios compatíveis com COVID-19 testaram positivo para SARS-COV-2. Estudos adicionais são necessários para avaliar a probabilidade de infecção por SARS-CoV-2 em pacientes com malignidades sólidas e hematológicas apresentando sintomas respiratórios.

Descritores: Proteínas do Envelope Viral; Sinais e Sintomas; Infecções por Coronavirus.

INTRODUCTION

Severe acute respiratory syndrome coronavirus-2 (SARS-COV-2) is a novel coronavirus identified in December 2019 in Wuhan, China[1]. The pathogen has, since, spread globally causing more than 4,000,000 cases and 278,000 deaths worldwide , including 155,939 and 10,627, respectively, in Brazil[2]. The World Health Organization declared a pandemic on March 11, 2020.

There is limited data on coronavirus disease-2019 (COVID-19) in patients with solid and hematologic malignancies, and the incidence of SARS-COV-2 in cancer patients with respiratory symptoms is not characterized[3-5]. Furthermore, to the best of our knowledge, publications to date describe clinical outcomes of cases that were already admitted to the hospital. We report on the incidence and clinical course of COVID-19 among patients with respiratory symptoms presenting to a cancer center emergency department (ED) in São Paulo, Brazil.

METHODS

We retrospectively reviewed medical records of 24 patients with a diagnosis of solid cancer and hematologic malignancies who presented to the ED with respiratory symptoms at the Centro de Oncologia e Hematologia Einstein Familia Dayan-Daycoval (São Paulo, Brazil) from March 13 to March, 29, 2020. We recorded demographic, clinical and treatment data. All patients underwent COVID-19 diagnostic testing by RT-PCR, and 20 also collected a multiplex panel for 15 respiratory viruses in upper respiratory tract specimens. Supplementary Figure 1 demonstrates the number of COVID-19 RT-PCR tests performed daily.
The study was approved by the ethics comittee of Hospital Israelita Albert Einstein (Protocol 30978820.0.0000.0071)

RESULTS

Eleven patients (46%) had solid cancer, and the remaining 13 (54%) had hematologic malignancies (Table 1). Detected viruses: SARS-COV-2 (n= 3 patients, 12%), rhinovirus (n= 3, 12%), coronavirus LN67 (n= 2, 8%), parainfluenza (n= 2, 8%), metapneumovirus, influenza A H1N1, and respiratory syncytial virus (n=1 each, 4%). One patient tested positive for both influenza A H1N1 and SARS-COV-2.

All 3 cases of COVID-19 occured in patients with hematologic malignancies (Table 1) – none on active treatment. All are alive (median follow-up 17 days). At the time of diagnosis, 1 patient was admitted to semi-intensive care unit and 2 were discharged in stable condition - one was subsequently hospitalized 11 days later due to worsening symptoms. Clinical course of

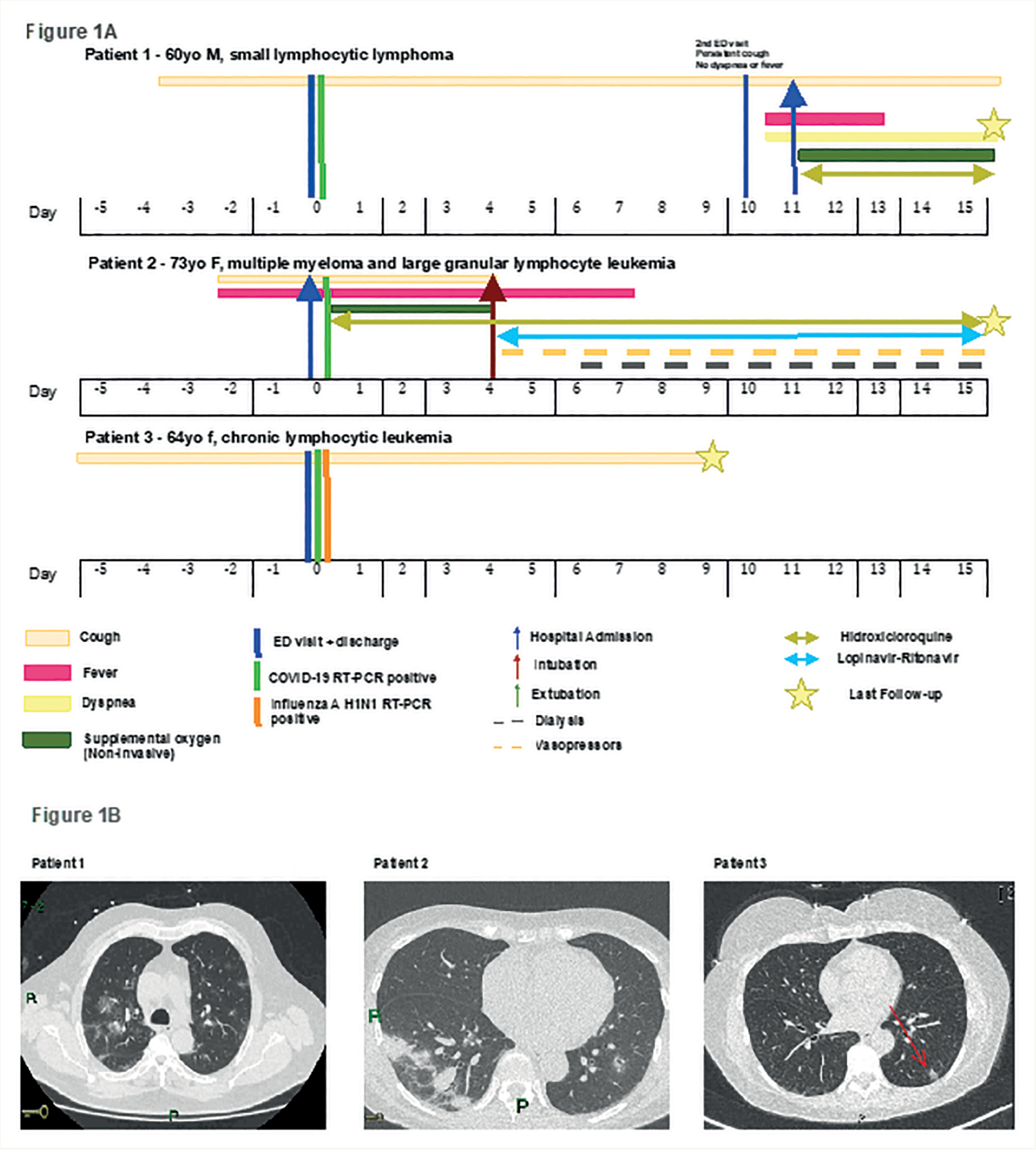

Figure 1. Clinical and radiologic characteristics of COVID-19 in 3 patients with hematologic malignancy.

the cases are summarized in Figure 1A. Patient 1 and 2 are still admitted. CT scan was performed in all patients (representative findings in Figure 1B).

DISCUSSION

SARS-CoV-2 is an emerging pathogen, and early data suggest higher morbimortality for patients with cancer[3-5]. Understanding the clinical spectrum of illness in this scenario is important for appropriate diagnosis and adequate management. Our study highlights the importance of considering alternate diagnosis during the initial pandemic, as only 12% of patients presenting to the emergency department with respiratory symptoms compatible with COVID-19 tested positive for SARS-COV-2, and 58% tested positive for other agents. Next, our data underlines the importance of patient education regarding worrisome symptoms after discharge, as onset of dyspnea can occur late – for patient 1, dyspnea requiring admission developed 14 days after symptom onset, while median time do dyspnea in unselected population is 8 days[1].

Table 1. Clinical Characteristics of patients enrolled in the study

Patient characteristics – N = 24	N (%) / mean (range)
Age	61 (33 – 95)
Primary diagnosis	
Solid Tumors	11 (46%)
GI cancers	3
Breast	3
Lung	2
Ovary	2
Head and neck	1
Hematologic Malignancies	13 (54%)
Multiple Myeloma	5
Acute leukemia	3
CLL	2
Lymphoma	3
SARS-COV-2 RT-PCR Positive*	3 (12%)
Multiple Myeloma	1
CLL	1
Lymphoma	1
LGL	1

*One patient had a diagnosis of Multiple myeloma and LGL

Further, we describe the clinical course a case of influenza A H1N1 coinfection with COVID-19 in a patient with hematologic malignancy. Viral coinfection has been described in 5.8% of COVID-19 patients, and could potentially be more common in immunocompromised hosts[6].

Ongoing studies are needed to assess the likelihood of SARS-CoV-2 infection in patients with solid and hematologic malignancies presenting with respiratory symptoms, as this will unequivocally evolve with the dynamic landscape of the pandemic. Moreover, additional data is central to determine patients at risk of readmission, to allow for the development of safe guidelines establishing factors that define need for hospitalization specifically for cancer patients.

AUTHOR'S CONTRIBUTION

Roberto Carmagnani Pestana: Collection and assembly of data, Conception and design, Data analysis and interpretation, Final approval of manuscript, Manuscript writing.

Donato Callegaro Filho: Conception and design, Data analysis and interpretation, Final approval of manuscript, Manuscript writing.

Ana Fernanda Centrone: Collection and assembly of data, Conception and design, Data analysis and interpretation.

Tania MIchelle Barreto Waisbeck: Collection and assembly of data, Conception and design, Provision of study materials or patient.

Heloisa Veasey Rodrigues: Conception and design, Data analysis and interpretation, Final approval of manuscript, Manuscript writing.

Sergio Eduardo Alonso Araujo: Data analysis and interpretation, Final approval of manuscript, Manuscript writing, Provision of study materials or patient.

Nelson Hamerschlak: Conception and design, Data analysis and interpretation, Final approval of manuscript, Manuscript writing, Provision of study materials or patient.

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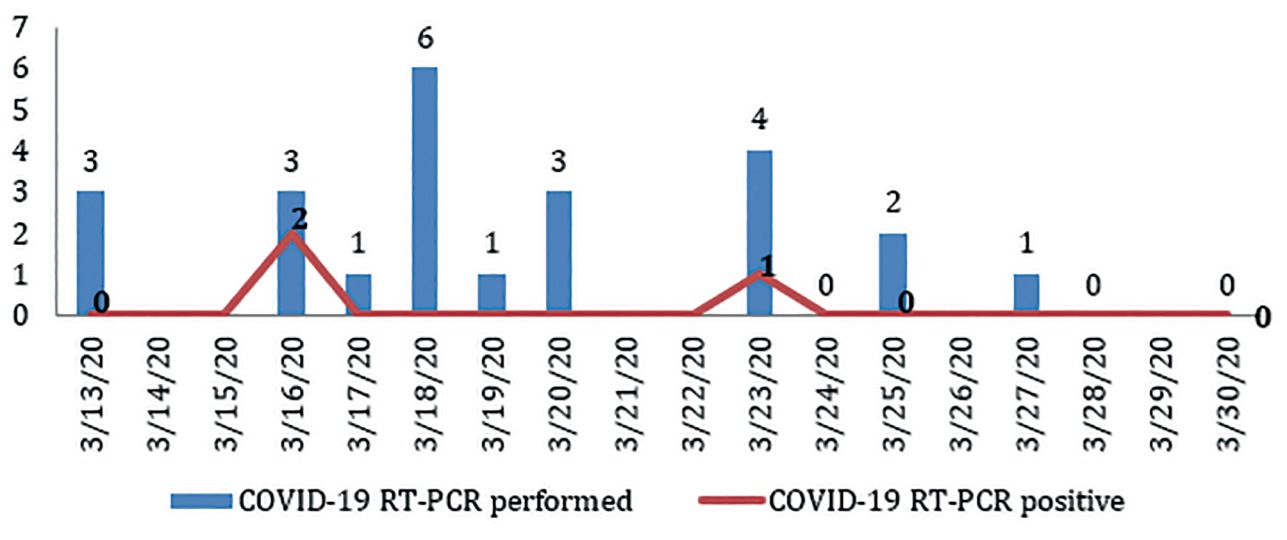

Supplementary Figure 1. Number of COVID-19 RT-PCR tests performed each day.