Evaluation of the Criteria Adopted to Identify Suspected Cases of COVID-19 in the Emergency Department Service of a Referral Palliative Oncology Care Unit

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Abstract

Context: Due to the need for isolation of inpatients with suspected COVID-19, accuracy in identifying these cases in Emergency Department (ED) has great relevance, especially in Palliative Oncology Care Unit (PCU). **Objective:** To evaluate the efficiency of clinical criteria adopted to identify suspected cases of COVID-19 by the ED in PCU. **Methods:** All patients admitted to PCU between April and June 2020 from ED were included. The clinical criteria adopted to identify suspected COVID-19 cases were: being in contact with a suspected or confirmed case less than 14 days ago and / or presenting fever with no defined focus and / or respiratory symptoms not explained by oncological disease and / or suggestive image in radiological examination (if necessary). All suspected cases were submitted to deep nasal and throat swab for SARS COV-2 investigation by Reverse Transcription Polymerase Chain Reaction Test, adopted as gold standard. Inpatients hospitalized by ED, without suspicion, and then diagnosed with COVID-19 within 10 days of hospitalization were considered as false-negative cases. **Results:** During the period, 327 patients were admitted from ED. Of these, 69 (21%) were considered suspects, of whom 34 (49%) tested positive for COVID-19. The sensitivity of the clinical criterion to identify suspected cases was 87%, specificity was 88%, positive predictive value was 49%, negative was 98% and accuracy was 88%. **Conclusion:** The clinical criteria adopted to identify suspected cases of COVID-19 at ED proved to be efficient, with low risk of spreading in-hospital infection, avoiding unnecessary isolation of patients.

Introduction

The pandemic caused by the new coronavirus, the causative agent of the disease called Coronavirus Disease 2019 (COVID-19), has brought a great challenge to health professionals, such as regular monitoring of patients, preparation for an increase in the volume of care, offer of safety conditions for health professionals, and creation of strategies in which patients (especially those who are fragile and in the group with the highest risk of death) were protected the best way possible.

The local governmental orientation is that patients with COVID-19 cannot be accompanied or receive visits during hospitalization,[1] which can be considered one of the challenging aspects of this disease. Alongside these restrictions, and linked to the fact that patients with advanced cancer in palliative care have reduced survival,[2] the promotion of quality of life, the control of symptoms and the relief of human suffering, principles of this type of care, could not be neglected.[3] In this context, the concept of comprehensive treatment for patients with advanced cancer affected by COVID-19 must include palliative care.[4]

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Table 1. Criteria for Screening Suspected Cases of COVID-19.

Criteria
1 Being in contact with a suspected or confirmed case less than 14 days ago and / or
2 Have fever with no defined focus and / or
3 Respiratory symptoms not explained by the oncological disease and / or
4 Suggestive radiological image (chest computed tomography), if necessary.

Therefore, the purpose was to meet the needs of patients with advanced cancer affected by COVID-19 in order to improve the offer of palliative care. These concerns motivated adaptations in the operation of a Palliative Care Unit (PCU) of the National Cancer Institute José Alencar Gomes da Silva (INCA), located in the city of Rio de Janeiro, Brazil.[5-7] The PCU is aimed at the exclusive care of patients with advanced cancer with a proposal for clinical management of non-invasive support, consisting of 4 care processes: outpatient, home care, hospitalization, and Emergency Department.

Historically, more than 80% of the patients admitted to the PCU have low functionality, with Karnofsky Performance Status (KPS) equivalent to 40% or less.[8,9] In the context of COVID-19, the expectation of functionality was equal to or worse than usual. In this context, the clinical approach with history, physical examination and epidemiological survey should prevail over imaging tests. The literature suggests chest computed tomography as the main auxiliary imaging test in the diagnosis of COVID-19,[10] however, due to the profile of patients admitted to the PCU, such an examination could add to the patient's increased suffering and discomfort, with low cost-benefit ratio.

Among the new established routines due to the pandemic caused by the new coronavirus, criteria were adopted to identify suspected cases of COVID-19, in an attempt to achieve an optimal screening of potential cases and guarantee the quality and safety of patients and collaborators who work in the health care units of the country.[11] The idea of preventing patients from being hospitalized or progressing to death alone, away from their families, motivated the development of such criteria, considering the guidelines of the government authorities[1] and the clinical profile of patients treated at the PCU.[2]

Thus, the objective of this work was to evaluate the efficiency of the clinical criteria adopted as an institutional routine for the identification of suspected cases of COVID-19 at the Emergency Department in the PCU.

Methods

This is a cross-sectional analysis of data from a retrospective study, carried out with patients treated at the INCA Palliative Care Unit, in the city of Rio de Janeiro. This proposal included all patients suspected of being infected with COVID-19 admitted between April and June 2020, at the Emergency Department. The clinical and demographic data were extracted from medical records. The research was approved by the INCA Ethics Committee under the protocol number CAAE: 31053220.0.0000.5274.

Screening for Suspected Cases of COVID-19 Infection

According to the new institutional routine determined during the pandemic period, all patients treated at the Emergency department in the period were screened for COVID-19. The clinical criteria adopted for screening suspected cases of COVID-19 are described in Table 1.

Image Examination

The preferred imaging test to help identifying suspected COVID-19 was chest computed tomography. It was only requested when criteria based on clinical evaluation were not sufficient to define or rule out suspicion. In addition, the patient's clinical condition should allow the image exam to be performed without increasing suffering. In case of doubt based on clinical aspects and the impossibility of performing computed tomography, the patient was considered a suspect.

Diagnostic Confirmation of COVID-19 Infection

Patients identified as suspected cases were submitted to deep nasal and throat swab test for SARS COV-2 research by using the Reverse Transcription Polymerase Chain Reaction (RT-PCR) method, adopted as the gold standard to define the infection. False-negative cases were considered as cases of patients hospitalized by the Emergency Department, without having been identified as suspected COVID-19 in the sector and then diagnosed with the infection within 10 days of hospital stay.[12]

Data Analysis

We processed statistical analyses using the Stata Data Analysis and Statistical Software Version 12.0. Kolmogorov-Smirnov's test was performed to assess distribution symmetry. Descriptive statistics is presented in percentages for the categorical variables and as mean with standard deviation (SD) for the continuous variables. Categorical variables were described in numbers of observation with frequency (%).

We calculated sensitivity, specificity, positive and negative predictive value, and accuracy of the method defined for screening suspected cases of COVID-19. For such analyses, the positive and negative results of diagnostic confirmation of COVID-19 by the RT-PCR method were considered.

Results

During the study period, 647 patients were treated at the Emergency Department, among which, 327 (50.1%) required hospitalization. Using the clinical criteria to screen suspected cases of COVID-19, 68 (20.1%) patients were considered with suspected
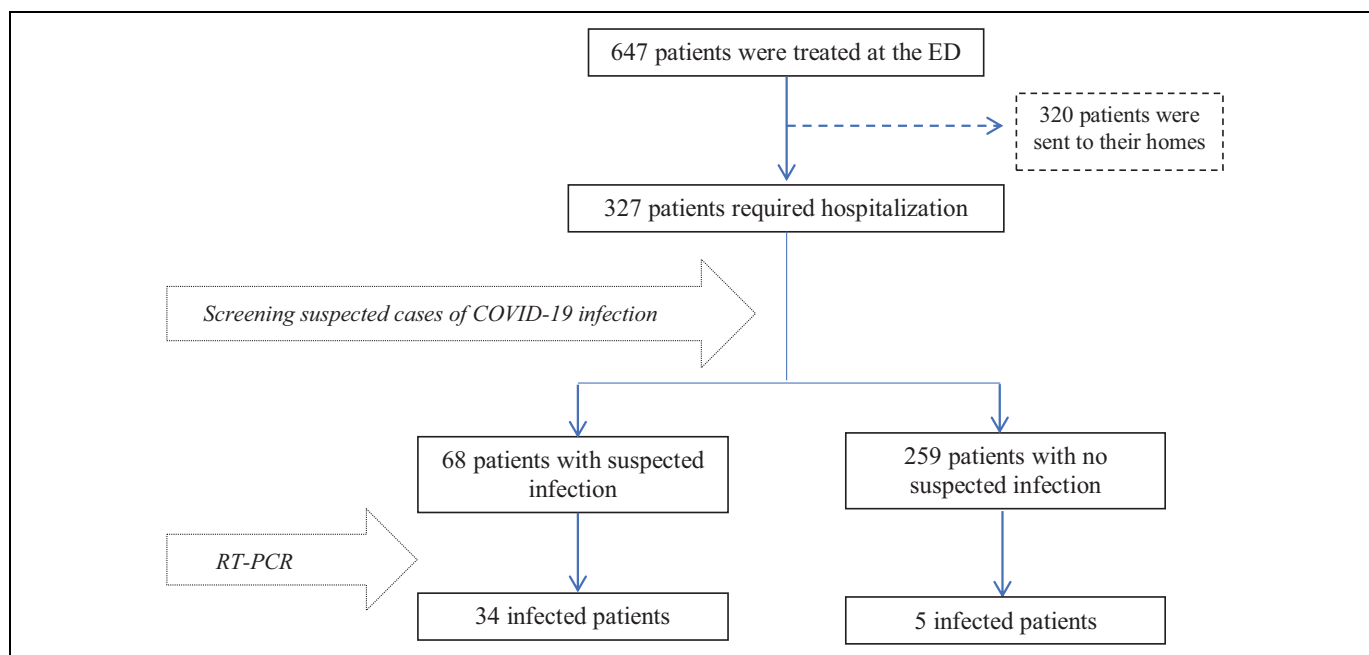
Figure 1. Flow diagram. Note: ED: Emergency Department; RT-PCR: Reverse Transcription Polymerase Chain Reaction.

Table 2. Characteristics of the Patients With Cancer Treated at a Palliative Care Unit in Rio de Janeiro With Suspected COVID-19 Infection (n = 68).

Variables	n (%)
Age (years)(mean ± SD)	62.2 (±13.4)
Gender	
Female	36 (52.9)
Male	32 (47.1)
Tumor Type	
Digestive system	11 (16.2)
Head and neck	10 (14.7)
Gynecological	9 (13.2)
Breast	9 (13.2)
Lung	6 (8.8)
Others	23 (33.8)

Notes: SD: standard deviation

infection. With the results of the RT-PCR analyses, 34 (50%) patients had the confirmation of the infection. In addition, among the 259 considered as non-suspicious, 5 (2%) had a suggestive symptom of COVID-19 in the first 10 days of hospitalization, had a nasal and throat swab test, and tested positive for the infection (considered false negative) (Figure 1).

The clinical and demographic characteristics of the patients considered with suspected infection by the adopted screening method are described in Table 2. The mean age was 62.2 (±13.4) years old, and 52.9% of the patients were female. The most common primary tumor site was located in the digestive system (16.2%), followed by head and neck (14.7%) and gynecological (13.2%).

According to our analyses, the criterion adopted as an institutional routine to screen suspected cases of COVID-19

showed sensitivity of 87.2%, specificity of 87.8%, positive predictive value of 49.3%, negative predictive value of 98.1% and accuracy of 87,8%.

Discussion

Our results show the strategies for prompt and assertive diagnosis and clarification, the clinical criterion adopted for early identification of suspected cases of COVID19 in the Emergency Department of a national reference palliative oncology care unit is efficient. It stands out, therefore, as an important element for the implementation of strategies aimed at improving the assistance to patients during a pandemic caused by the new coronavirus. Quality care should start with the correct diagnosis of cases.

The indication and valuation of a test are governed, among other elements, by its cost-benefit ratio.[13] Considering the results of precision analyses (sensitivity of 87.2% and specificity of 87.8%) and the fact that the analyzed clinical criteria are easy to use in clinical practice, the employment of this model of identification of suspected cases can be considered relevant.

Among the symptoms presented by patients with suspected COVID-19, dyspnea was one of the symptoms that deserved greater attention due to its high prevalence in advanced cancer disease and in cases of COVID-19 pneumonia.[14,15] The radiological evaluation by computed tomography of the chest helped the clinical diagnosis, allowing for differentiating the dyspnea caused by COVID from that caused by the evolution of cancer.[16] The technical preparation of the team must also be considered.

It is worth mentioning that only 4 cases of nosocomial transmission were documented in the unit in the period, and in

return, several patients were able to live their final moments accompanied by family members.

The results observed in this study confirm the impact and accuracy of clinical diagnosis in medical practice. They can help to base palliative care services on the definition of a suspected case of COVID-19, reducing unnecessary isolation and the indiscriminate performance of complementary exams. Such a practice becomes more valuable in services with scarcer resources.

Different strategies can be adopted, considering the characteristics of each assistance service, aiming at improving care, but not only in relation to the identification of cases of infected patients. We can mention, for example, that the use of Information and Communication Technologies can contribute to the promotion of distance communication between hospitalized patients and their family members / beloved ones, corroborating for the reduction of suffering during hospitalization and humanization of the death process in times of pandemic. All the effort put in make it possible to professionally manage the relevant characteristics / demands of this population, which reflects on quality of life and death. Cancer patients in palliative care need and have the right to be welcomed and cared for, to have their physical, emotional, and psychosocial needs met.[17]

However, some limitations need to be described. The major one was to consider only the RT-PCR as a confirmed case definition since the sensitivity of the test is less than 100%. Clinical suspicions corroborated by image examination were not analyzed, correlating with the result of the RT-PCR research. In addition, this was a retrospective study, making the potential for selection bias unavoidable and the analyses are based on data obtained from a single institution.

Conclusion

The clinical criteria adopted to identify suspected cases of COVID-19 at the Emergency Department proved to be efficient, with a low risk of in-hospital spread of the infection, avoiding unnecessary isolation of patients in palliative oncology care.

Declaration of Conflicting Interests

Funding

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