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Clinical presentation of Covid-19 Disease in two Rural New York Counties

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Clinical presentation of Covid-19 Disease in two Rural New York Counties

Abstract

Purpose

To analyze the phenotypic expression of Coronavirus infection (COVID-19) among patients residing in the Chemung and Schuyler counties of New York State.

Method

A retrospective review of medical records was performed between March 16, 2020 to April 16, 2020. Sixty- five patients presenting with symptoms of COVID-19 infection were included in this IRB-exempt study. Presence of infection was confirmed using reverse transcriptase polymerase chain reaction (RT-PCR) from nasopharyngeal swab samples, as per Centers for Disease Control and prevention (CDC) guidelines.

Results

Patients varied in age from 13 to 82 years, with nearly equal proportion of females (51%) vs males (49%) affected. The most common presenting symptoms were cough (80%), fever (75.3%) and myalgia (63%). Less commonly reported symptoms included fatigue (48%), dyspnea (38%), sore throat (35%), headache (34%), gastrointestinal symptoms (32%), loss of smell/taste (29%), rhinorrhea (23%), anorexia (17%), sputum production (1.54%), red eyes (1.5%) and rash (1.5%).

Conclusion

We found that patients with COVID- 19 infection most commonly presented with fever and cough in these two rural counties. Further research is needed to study phenotypic regional variations in an effort to both risk stratify and identify patients who may present with findings which may otherwise be difficult to diagnose.

Keywords

COVID-19, severe acute respiratory syndrome corona virus 2 (SARS-CoV-2), clinical presentation, rural counties.

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Cover Page Footnote

Dr. Jacqueline Crisman Christine Brown

Introduction:

In January of 2020, the first United States case of novel Coronavirus disease 2019 (hereinafter referred to as COVID-19), caused by the virus SARS-COV-2, was diagnosed in the state of Washington¹. COVID-19 subsequently spread rapidly across the United States. As of March 4th 2021, there were 28,845,228 confirmed cases reported in the United States² with 1,657,777 confirmed cases reported by the state of New York.³ The World Health Organization has declared COVID-19 a public health emergency of international concern, while around 90 percent of the countries have been in various levels of lockdown in attempts to control the pandemic.^{4,5}

COVID-19 belongs to the coronaviruses (CoVs) family, Coronaviridae, which are enveloped single-stranded positive sense RNA viruses.⁶ Coronavirus diseases are more commonly reported in animals, but COVID-19 appears to be highly contagious in humans. COVID-19 is transmitted by inhalation of respiratory droplets or close contact with infected people.⁷ The incubation period ranges from 2-14 days. The clinical spectrum of COVID-19 varies from asymptomatic or very minimal symptoms to severe respiratory failure and/or severe multi organ failure.⁸ The most common symptoms include cough, fever, sore throat, breathlessness, fatigue, myalgia and malaise.⁹ It has been shown that COVID-19 can also present with gastrointestinal symptoms such as diarrhea, diminished appetite, and nausea.¹⁰ In some cases COVID-19 may progress to pneumonia, acute respiratory distress syndrome (ARDS) and multi organ dysfunction.⁹

Several papers have been written regarding the presenting symptoms of COVID-19 in other countries and urban regions of the United States; however, few have described presenting symptoms of COVID-19 rural areas.¹ Here we relate the results of an analysis of the clinical characteristics of sixty-five COVID -19 patients evaluated at two out-patient respiratory screening clinics in rural New York State.

Methods:

We conducted a retrospective analysis and systemic chart review of 65 patients with confirmed SARS-CoV-2 by the COVID-19 PCR based diagnostic test. The patients tested were either referred from the county's COVID hot line^{12, 13} or directly from a physician's office and were tested at respiratory clinics located in Chemung County and Schuyler County, New York. Data collection occurred during the first month of the pandemic (March 16, 2020 to April 16, 2020) due to small numbers of cases in the region and uncertainty regarding how long the pandemic would continue. Patients were not asked about symptoms in a standardized manner and symptoms listed were provider dependent based on our retrospective chart analysis. No symptoms were excluded. Data collection included all initial presenting symptoms listed above, but limitations in the data set did not allow for demographic collection beyond age and gender, duration of symptomatology, and exposure history. Our retrospective study was based on out-patient records only and did not include review of hospitalizations or mortality.

Results:

The patient population ranged between the ages of thirteen and eighty-two with thirty-three female (51%) and thirty-two (49%) male patients. The most common initial presenting symptoms in this population were cough, fever (cut off 100.4 degrees Fahrenheit) and myalgia (Figure 1).

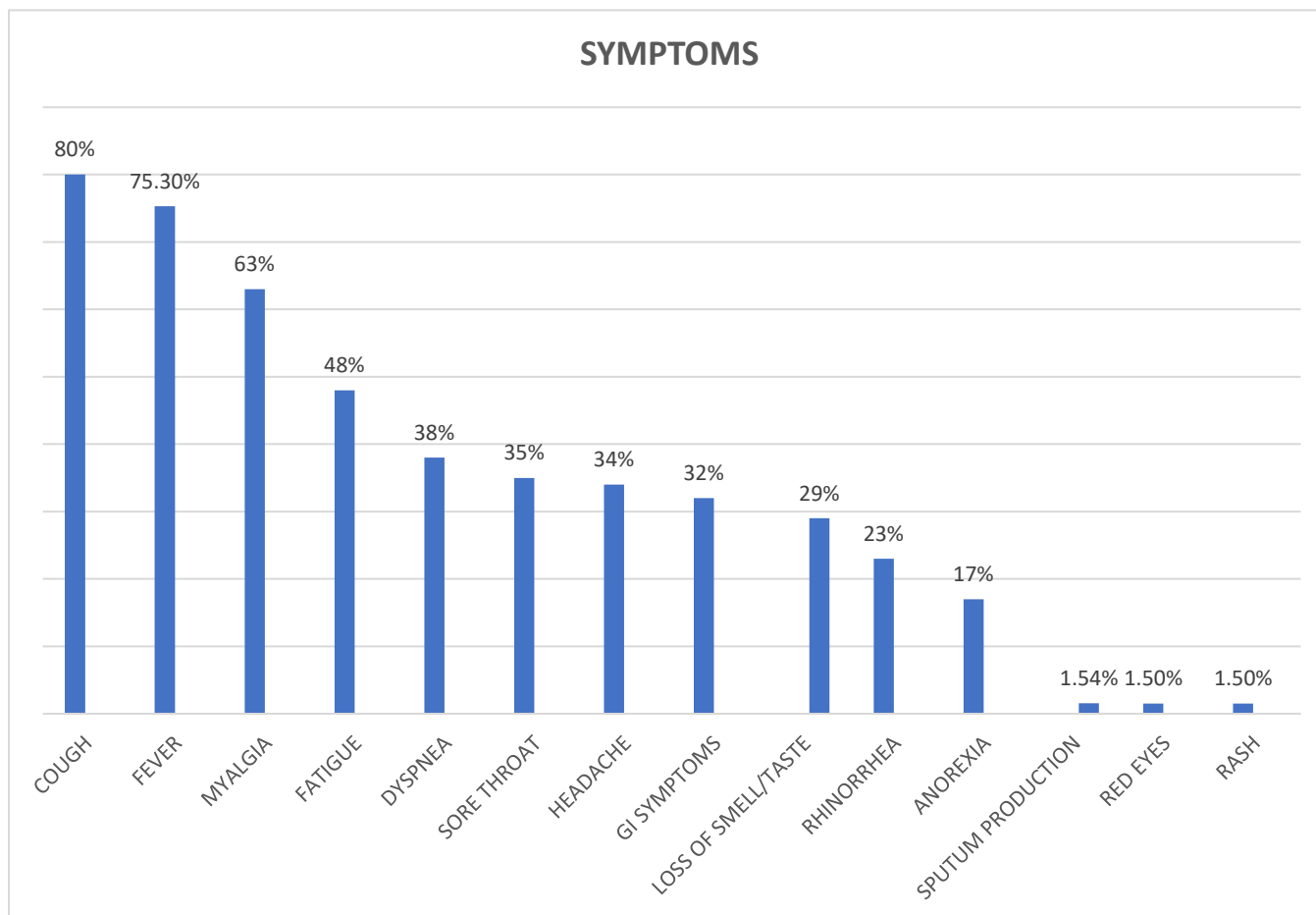


Figure 1: COVID-19 Symptoms

Discussion:

This retrospective study analyzed the data of COVID-19 primary presenting symptoms in two rural counties in New York State. We compared our data with data taken from similar studies performed in other United States (US) states.¹⁴⁻²⁴ The data comparison shows that the common symptoms of COVID-19 varies from state to state. The most common symptoms reported by the patients of Chemung and Schuyler counties are fever, cough and myalgia whereas in Wisconsin, most of the COVID-19 patients presented with no fever and more gastrointestinal symptoms

such as nausea, vomiting, diarrhea and abdominal pain.¹⁴ Similarly, the Minnesota Department of Health, Texas Department of Health Services, New York City Department of Health and Florida Health Services reported the most common presenting symptoms as fever, cough and dypnea whereas the Alaska Department of Health reported fever, cough and fatigue as the most common symptoms.¹⁵⁻¹⁹

The myalgia recorded in Chemung and Schuyler counties, however, is not listed as a common symptom in our comparative studies from other states. A randomized study conducted at 14 academic health care systems in 13 different states, during the period from *April 15, 2020* to *June 25, 2020*, reported that cough, fatigue and dyspnea were the most prevalent symptoms in patients that were interviewed, showing only one commonality with our population--cough.²⁰

Our study has a few important limitations. The study was a retrospective chart review conducted on a small number of patients (i.e., the first 65 patients that tested positive), at a single site in each county. Another limitation of our study was that it was not randomized, and it only included symptomatic patients who tested positive whereas other studies have demonstrated that the majority of patients with COVID-19 are asymptomatic.²¹⁻²³ Furthermore, testing kits were in limited quantities during the time of study for the rural areas like Chemung and Schuyler Counties, so patients with mild symptoms didn't get tested and asymptomatic patients were not screened for the virus, though may have still been infected.

Conclusion:

The COVID-19 outbreak has spread worldwide and has numerous clinical manifestations. Our study performed at the onset of the COVID outbreak in Chemung and Schuyler counties showed that fever, cough and myalgia were the most commonly reported presenting symptoms in select rural communities. This does vary slightly from the presenting symptoms of other studies, mainly conducted in urban areas. More research is needed to see if there is any regional variation in the presentation of COVID-19.

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There are no conflicts of interest to report.

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