

An Epidemiologic Study of Patients Registered at COVID-19 Screening Centre and Analysis of Factors for Low Incidence of COVID-19 in a Tertiary Care Centre in New Delhi, India

Priyanka Kundra¹, Sameeksha Jain², H.R.Singh³, Neeta Wardhan⁴, P.K.Dass⁵, Dharmendra Kumar Basu⁶

¹Medical Officer, Lady Hardinge Medical College & Smt. Sucheta Kriplani Hospital, New Delhi;

²Medical Officer, Lady Hardinge Medical College & Smt. Sucheta Kriplani Hospital, New Delhi;

³Additional Medical Superintendent, Lady Hardinge Medical College & Smt. Sucheta Kriplani Hospital, New Delhi;

⁴Associate Professor, Department of Pharmacology, Lady Hardinge Medical College & Smt. Sucheta Kriplani Hospital, New Delhi;

⁵Associate Professor, Department of Anatomy, Lady Hardinge Medical College & Smt. Sucheta Kriplani Hospital, New Delhi;

⁶Associate Professor, Department of Physiology, Lady Hardinge Medical College & Smt. Sucheta Kriplani Hospital, New Delhi, India.

Abstract

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) originated in Wuhan, China in December 2019 and has spread rapidly all over the world. The aim of this study is to describe the epidemiological profile and clinical presentation of the patients at the COVID-19 screening centre in a tertiary care hospital in central Delhi and to also analyse factors for low incidence of COVID -19 cases. It is a retrospective observational study of 371 patients who underwent testing as per current ICMR (Indian Council of Medical Research) guidelines where both nasopharyngeal and oropharyngeal swabs were taken for Reverse transcriptase – Polymerase Chain Reaction (RT-PCR) test. Clinical data including age, sex, travel history, contact history, symptoms and co-morbidities were collected. Mean age of patients was 34.88 years and males were more common (60.9%). The most common presentation of these patients was of upper respiratory tract infection (fever in 93% and cough in 89.8%). In tested patients, 79 patients (21.3%) gave the history of contact with laboratory confirmed COVID-19 patient and only 15 (4%) had a travel history outside India. Out of 371 patients whose sampling was done, 17 came out to be COVID-19 positive. BCG vaccination may have reduced the number of cases in country.

Keywords: SARS-CoV-2, Reverse transcriptase – Polymerase Chain Reaction, COVID-19, low, morbidity, mortality.

I. INTRODUCTION

SARS-CoV-2 also called COVID -19 originated in Wuhan province of China in December 2019, possibly in a seafood market[1]. It is caused by virus from family of Coronavirus, of which similar virus also caused the outbreak of SARS (Severe Acute Respiratory Syndrome) in 2002[2].

From Wuhan province of China, the disease has spread rapidly all over the world [3]. It was declared PHEIC on dated 27.01.20 and 1st case reported in India on 30th January 2020 [4]. It presents with a spectrum of symptoms from asymptomatic to pneumonia like symptoms and is more severe in older (>60 years) individuals and in those with underlying health conditions[5].

Initial studies in China showed that fever and cough were predominant symptoms and spread was mainly through respiratory droplets and direct contact [6].

To prevent the spread, screening and testing for SARS-COV2 was started in India as per ICMR guidelines, which were revised periodically [7].

A COVID 19 screening centre was set up in LHMC on 11th March 2020. Where all patients were screened from various areas and symptomatic patients were tested as per guidelines.

Till April 12, 2020, 2229 patients have been screened of which 17 tested positive.

We present our findings of 371 patients who underwent testing as per guidelines, from the initiation of COVID-19 screening centre.

The aim of this retrospective study is to describe the epidemiological profile and clinical presentation of the patients at the COVID-19 screening centre in a tertiary care hospital in central Delhi used for screening and sampling of the suspected cases and to also analyse factors for low incidence of COVID-19 cases.

II. METHODS

All patients who presented with fever and cough like symptoms were examined by the dedicated team of health care workers and doctors and a standard Performa was filled for each patient. Clinical data including age, sex, travel history, contact history, symptoms and co-morbidities were collected. As per current ICMR (Indian Council of Medical Research) guidelines at the times patient who required to be tested were sent for sampling, where both nasopharyngeal and oropharyngeal swabs were taken for Reverse transcriptase – Polymerase Chain Reaction (RT-PCR) test.

The virology laboratory in the department of Microbiology, LHMC & SSKH for testing of COVID-19 samples was established on 17th March 2020. Before that samples were sent to NCDC (National Centre for Disease Control) for testing. Testing was conducted as per ICMR guidelines which recommended testing for:-

1. All asymptomatic people who have undertaken International travel in the last 14 days.
2. All contacts of laboratory confirmed positive cases.
3. Health care workers managing respiratory distress / Severe Acute Respiratory Illness should be tested when they are symptomatic.

These were revised on 20th March 2020 and had following categories:-

1. All symptomatic individuals who have undertaken international travel in the last 14 days
2. All symptomatic contacts of laboratory confirmed cases
3. All symptomatic health care workers
4. All hospitalized patients with Severe Acute Respiratory Illness (fever AND cough and/or shortness of breath)
5. Asymptomatic direct and high-risk contacts of a confirmed case should be tested once between day 5 and day 14 of coming in his/her contact.

A 6th category was added on 9th April 2020 - All symptomatic Influenza like Illness (fever, cough, sore throat, runny nose).

- a) within 7 days of illness, test should be conducted by rRT-PCR.
- b) after 7 days of illness, antibody test should be conducted, which, if negative, should be confirmed by rRT-PCR[7].

All positive cases were reported to IDSP (Integrated Disease Surveillance Programme) and concerned authorities for contact tracing. All positive for COVID-19 patients and suspects were admitted/quarantined in the designated hospitals/isolation centres.

III. RESULTS

The study was conducted over a period of one month from 11.03.2020 to 12.04.2020 in a tertiary care hospital in which 371 patients were tested as per guidelines. The demographic and clinical profile is summarized in Table I. The mean age of patients was 34.88 years, youngest being 11 years and oldest being 80 years. Maximum number of patients being tested were of 30 years of age. Males were more common (60.9%) as compared to females (39.1%). Religion wise Hindu (88.7%) patients dominated followed by Muslims (10.2%) and Christian (1.1%).

In tested patients, 79 patients (21.3%) gave the history of contact with laboratory confirmed COVID-19 patient. Only 15 (4%) had a travel history outside India. Among them 4 travelled to Italy followed by 2 to UK, China and Dubai each and other five travelled to Vietnam, USA, Malaysia, France and Spain respectively.

The most common presentation of these patients were fever (93%) and cough (89.8%). Dyspnoea was present in only 13 (3.5%) patients as shown in Fig. 1. 21 (5.7%) patients had co-morbidities. The common co-morbidities were diabetes mellitus in 12 (3.2%) patients, hypertension in 8 (2.2%) patients and hypothyroidism in 7 (1.9%) patients as shown in Fig. 2.

Table I: Demographic and Clinical Profile of COVID-19 Patients

| S. No. | Parameters | Frequency (n=371) | Percentage (%) |
|--------|------------------|-------------------|----------------|
| 1. | Sex: | | |
| | Female | 145 | 39.1 |
| | Male | 226 | 60.9 |
| 2. | Religion: | | |
| | Hindu | 329 | 88.7 |
| | Muslim | 38 | 10.2 |
| | Christian | 4 | 1.1 |
| 3. | Age: | | |
| | ≤ 40 | 270 | 72.8 |
| | > 40 | 101 | 27.2 |
| 4. | Symptoms: | | |
| | Yes | 355 | 95.7 |
| | No | 16 | 4.3 |

| | | | |
|----|------------------------|-----|------|
| 5. | Co-Morbidities: | | |
| | Yes | 21 | 5.7 |
| | No | 350 | 94.3 |
| 6. | Test Result: | | |
| | Positive | 17 | 4.6 |
| | Negative | 354 | 95.4 |

IV. DISCUSSION AND CONCLUSION

SARS-COV2 is a global pandemic caused by virus from Coronavirus family. They are single stranded RNA virus of Nidovirales order[8]. Currently it has spread to 213 countries affecting more than four million individuals and causing more than 279000 deaths globally till 8th May 2020 [9].

Figure 1: Symptoms and Other Parameters Associated with COVID-19

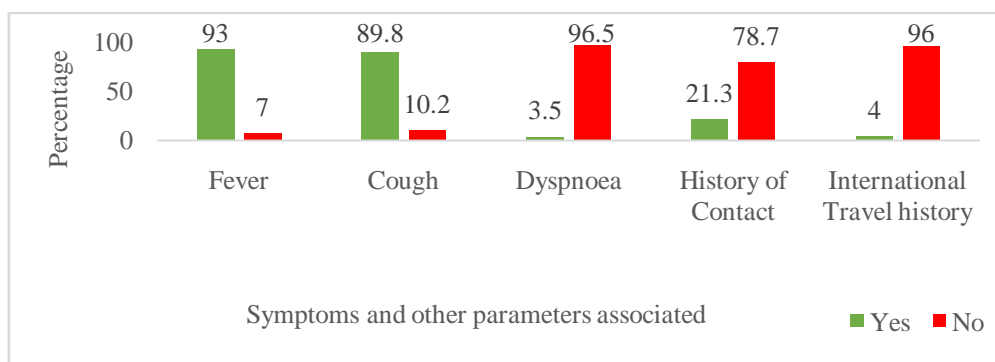
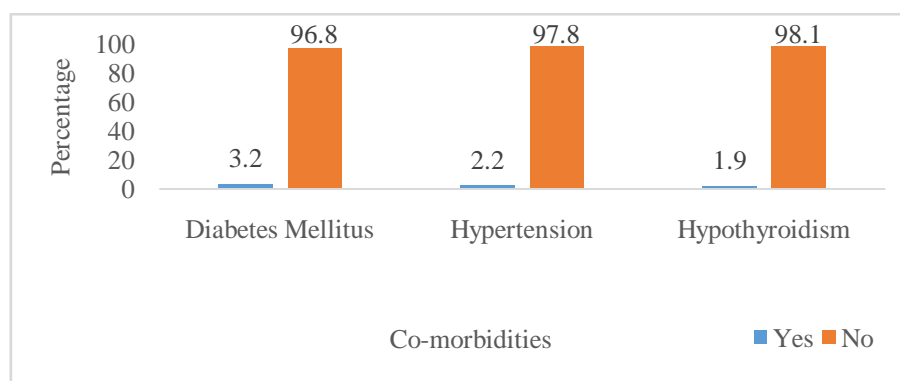


Figure 2: Co-Morbidities Present in Patients Coming for Screening of COVID-19



India reported first case of SARS-COV2 on 30th January 2020 from the state of Kerala. The patient had returned from Wuhan, China. On 3rd March first case was reported in New Delhi[4]. Since then, it has spread rapidly to involve 32 states and union territories as of May. There are 62939 confirmed cases with 2109 deaths as of 8th May 2020 [9].

Delhi has been severely affected with second highest number of cases, with 6542 cases and 73 deaths as of 8th May 2020[9].

LHMC is a tertiary care hospital in New Delhi where screening and testing for SARS-COV2 is being carried out since 11th March 2020.

This is a retrospective observational study on the epidemiology and clinical presentation of the 371 patients tested at the COVID-19 screening centre, LHMC. The majority of the population was of young adults. This may be due to limited travel by elderly people and may not be related to susceptibility of

these population. Male were more commonly tested with mean age of 34.88 years. The frequent presentation was fever and cough. It was similar to the study conducted in 18 patients in Singapore and previously reported studies from Wuhan, China [10]. There was a history of travel outside India in 15(4%) patients with four patients having a history of travel to Italy and two to China.

This study represents the patients who have presented flu like symptoms to a tertiary care centre and were tested after screening. It gives us the picture that when 2229 patients were screened through clinical symptoms and 371 were sampled, then only 17 patients were positive. So this study gives us the insight on that even when the guidelines were followed and the sampling was done, only limited number of people in Delhi were coming positive. Further studies are required to understand the actual picture of this epidemic in India. India was in lockdown in very early stage of disease when only

600 patients were positive in a population of more than a billion [9]. This study also provides evidence that the effects of lockdown has possibly flattened the curve. As even when the samples were taken from highly suspected individuals only few came positive.

If we analyse the factors for low incidence in India, the BCG vaccination may have reduced the number of cases in country. The combination of reduced morbidity and mortality makes BCG a potential new tool which can be studied in the fight against COVID 19 [11]. Widespread use of Chloroquine in India for malaria treatment may have also provided protection against COVID 19 in India [12].

Conclusion

In the present study, out of 371 patients whose sampling was done, 17 came out to be COVID-19 positive. The clinical presentation is frequently an upper respiratory tract infection with symptoms like fever and cough. A study of disease spread and clinical presentation in larger population will give us an idea about the prevalence of COVID-19 in India.

Limitation

The study was done at the COVID-19 screening centre and clinical characteristics of the people may be difficult to generalize at national level.

ACKNOWLEDGEMENT

We would like to acknowledge the efforts and encouragement of Dr. H. R. Singh (our Head of the Department), Sister In-Charge of COVID-19 Screening Centre and our families.

REFERENCES

- [1] Huang C, Wang Y, Li X, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet* 2020; 395: 497–506.
- [2] Peiris JSM, Guan Y, Yuen KY. Severe acute respiratory syndrome. *Nat Med* 2004; 10 (suppl 12): S88–97.
- [3] Coronavirus disease (COVID-19) pandemic. Geneva: World Health Organization (<https://www.who.int/emergencies/diseases/novel-coronavirus-2019>)
- [4] Mukesh R. "Coronavirus in India: Tracking country's first 50 COVID-19 cases; what numbers tell". *IndiaToday*. Retrieved 12 March 2020.
- [5] WHO. Novel coronavirus (2019-nCoV) situation report–3. Jan 23, 2020. <https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200123-sitrep-3-2019-ncov.pdf>
- [6] Guan W, Ni Z, Hu Y, et al. Clinical characteristics of coronavirus disease 2019 in China. *N Engl J Med* 2020. doi: 10.1056/NEJMoa2002032.
- [7] Indian Council For Medical Research (<https://icmr.nic.in/content/covid-19>)
- [8] Coronavirus Pathogenesis and the Emerging Pathogen Severe Acute Respiratory Syndrome Coronavirus. Susan R. Weiss, Sonia Navas-Martin. *Microbiology and Molecular Biology Reviews* Dec 2005, 69 (4) 635–664; DOI: 10.1128/MMBR.69.4.635-664.2005.
- [9] Ministry of Health and Family Welfare, Government of India. (<https://www.mohfw.gov.in/>).
- [10] Young BE, et al. Epidemiologic features and Clinical course of patients infected with SARS-CoV-2 in Singapore. *JAMA*. 2020;323(15):1488–1494 doi:10.1001/jama.2020.3204.
- [11] Miller A, Reandelar MJ, et al. Correlation between Universal BCG vaccination policy and reduced morbidity and mortality for COVID-19: An Epidemiological Study. *medRxiv preprint* doi: <https://doi.org/10.1101/2020.03.24.20042937>.
- [12] Rathi S, Ish P, Kalantri A, Kalantri S. Hydroxychloroquine prophylaxis for COVID-19 contacts in India. *The Lancet Infectious Disease*. Apr 17(2020) doi:10.1016/S1473-3099(20)30313-3.