Status of testing for nCovid-19 in a newly established tertiary care hospital in western Jaipur (Rajasthan) India

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Abstract—*Whole world is facing nCovid-19 pandemic presently. In India it its spread is expected more because of more population density so finding new cases is a important step in control of epidemic in India. So this study was conducted in a newly established Government Medical College in western Rajasthan to know the status of testing for nCovid-19 cases. It was found that 2532 samples were received for testing nCovid-19 upto16th May 2020, 77.1% were tested with pendency of 22.1% samples. Out of these tested, results were declared of 96.67% with result awaited of 3.33% samples. Out of 1886 samples with result declared during study period, the positivity rate was found 1.92%. Time lag in sample received and result declared was 0.89±0.31 days. Positive cases were with mean age 34.05±16.28 years and M:F 4.5. Among positive cases majority 35.1% were from Aaspur area of Dungarpur.*

Keywords: Coronavirus, nCovid-19, Positivity Rate, Time lag in testing, Dungarpur.

I. INTRODUCTION

Presently its pandemic of nCovid-19 which was initiated in Wuhan city of China in December 2019.[1] Coronavirus disease 2019 (COVID-19) was declared as pandemic by the WHO on March 11 2020.[2] It is caused by Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) which was isolated from the throat and nasal swab cultures.[3,4] It's clinical manifestations included fever, dyspnea, fatigue, dry cough, myalgia, lymphopenia, radiographic findings of pneumonia and in severe cases with acute respiratory distress syndrome (ARDS), acute respiratory failure etc.[5,6] Reports said that even asymptomatic COVID-19 could transfer the disease.[7,8]

To control the epidemic of nCovid-19, maximum case identification and treatment has very important role. Thus, detection of the causative pathogen is essential in controlling the outbreak among both asymptomatic carriers and individuals showing signs of the disease.[9]

As rapid antibodies test for nCovid-19 was stopped[10] by Indian council of Medical Research (ICMR) as per the advice of Rajasthan health minister Mr. Raghu Sharma who reported very less (5.4%) acuracy of these tests, only RT-PCR test for nCovid-19 remains in India.[11]

ICMR reported that a total of 1,37,346 tests were done and the top three states which are doing vigorous testing includes are Maharashtra, Tamil Nadu and Rajasthan. RT-PCR tests are now available in 310 government laboratories and 111 private set up across the country.[12]

Government Medical College Dungarpur is also one of the centre for testing for nCovid-19 in western Rajasthan. So this present study was conducted to know the status of testing for nCovid-19 in western Rajasthan.

II. METHODOLOGY

This laboratory based descriptive analytic study was conducted in Government Medical College, Dungarpur (Rajasthan) India in May 2019.

Government Medical College, Dungarpur is a newly established medical college in Rajasthan. Microbiology department of this medical college had three RT-PCR and after getting permission from the state government it had started doing tests nCovid-19 since 5th May 2020.

After taking approval from institutional ethical committee, information regarding samples received for testing, sample tested, results of tested samples and information about positive test were collected from microbiology department of this medical college.

Data thus collected were compiled in the form of master chart in Microsoft Excel 2010. Qualitative data were expressed in percentage & proportion and quantitative data were expressed in mean and standard deviation.

III. RESULTS

In Government Medical College, Dungarpur, 2532 samples were received for testing nCovid-19 till 16th May 2020. Out of these 2532 samples received, 1951 (77.1%) were tested with pendency of 581(22.9%) samples. Out of these 1951 tested, results were declared of 1886 (96.67%) with result awaited of 28 (3.33%) samples. Out of these 1886 samples whose results were received, 37 were found positive having test positivity rate 1.92%. Positivity rate was maximum (8.14%) on 15th May samples and least before 13th May samples. (Table 1)

Table 1

Status of samples and positivity rate

Date	Sample received	Sample Tested	Pending	Result of sample tested			Result Awaited	Positivity Rate (%)
				Positives	Negatives	Total		
Before 13/05/2020	1182	1182	0	5	1177	1182	0	**0.42**
13/05/2020	107	107	0	3	96	99	8	**3.03**
14/05/2020	127	127	0	2	109	111	16	**1.80**
15/05/2020	518	258	260	21	237	258	0	**8.14**
16/05/2020	598	277	321	6	267	273	4	**2.20**
Overall	2532	1951	581	37	1886	1923	28	**1.92**

Among 37 found positives, maximum (56.8%) were found on 15th May 2020 followed by on 16th May, 13th May etc. when time lag in sample received and result declared was analyzed mean time lag was found 0.89±0.31 days i.e. less than one day .(Table 2)

Table 2

Date wise Sample results received of positive cases and time lag in sample received & result declared

S. No.	Date of Declared Positive	Number of Samples	% of Samples	Date of Sample Received	Time lag (Day)
1	5/5/2020	2	5.4	5/5/2020	<1
2	5/9/2020	1	2.7	5/9/2020	<1
3	5/10/2020	1	2.7	5/9/2020	1
4	5/12/2020	1	2.7	5/12/2020	<1
5	5/13/2020	3	8.1	5/12/2020	1
6	5/14/2020	2	5.4	5/13/2020	1
7	5/15/2020	16	56.8	5/14/2020	1
8	5/15/2020	5		5/15/2020	<1
9	5/16/2020	6	16.2	5/15/2020	1
	Grand Total	**37**	100.0	Mean±SD	0.89±0.31

Cases found positive were with mean age 34.05±16.28 years with M:F 4.5. Out of 37 found positive cases majority (51.35%) were in 16-30 Years age group followed by 31-45 Years, 46-60 Years, >60 Years and <16 years age group. (Table 3)

Table 3

Age and Sex wise distribution of nCovid-19 Positive cases (N=37)

S. No.	Age Groups	Sex		Grand Total	
		Females	Males	Number	%
1	(1)<16 Years	1	0	1	2.70
2	(2) 16-30 Years	3	16	19	51.35
3	(3) 31-45 Years	1	8	9	24.32
4	(4) 46-60 Years	1	5	6	16.22
5	(5) >60 Years	1	1	2	5.41
	Grand Total	**7**	**30**	**37**	100.00

Mean age 34.05 ± 16.28 years with M:F=4.5

Out of these 37 found positive cases, 2 were from Banwara district otherwise all were form Dungarpur district. Residence of one person is not known. Those who were from Doogarpur district majority were from Aaspur area followed by Aatri Rawal Basti, Deval, Doogarpur city, Faloda, Karkoli, Punjpur, Ramgarh,Sabla, Sagwara, Thamtalab and Vodigama (Figure 1& Table 4).

Figure 1

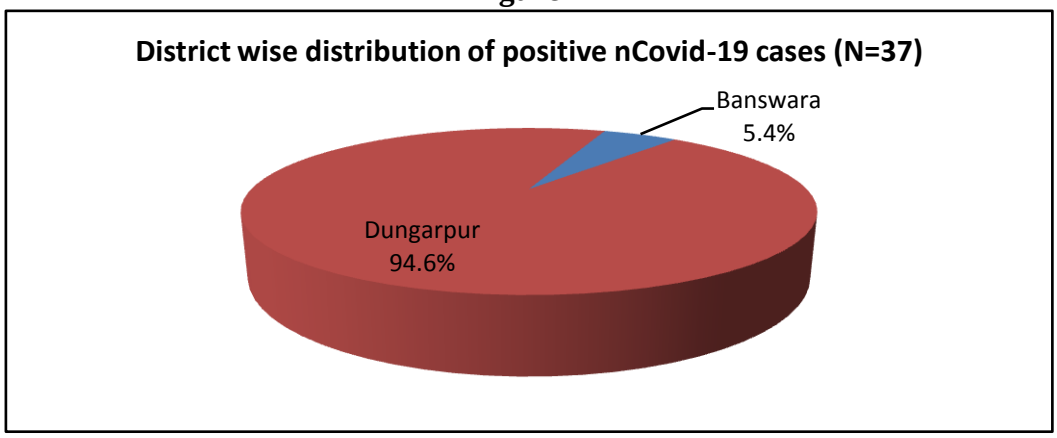

Table 5
Residence wise distribution of nCovid-19 Positive cases (N=37)

S. No.	Residence	Number	%
1	Aaspur	13	35.1
2	Aatri Rawal Basti	4	10.8
3	Deval	1	2.7
4	Dungarpur town	1	2.7
5	Faloda	1	2.7
6	Karkoli	2	5.4
7	Punjpur	1	2.7
8	Ramgarh	5	13.5
9	Sabla	1	2.7
10	Sagwara	3	8.1
11	Thamtalab	1	2.7
12	Vodigama	1	2.7
13	Banswara	2	5.4
14	Unknown	1	2.7
	Grand Total	**37**	100.0

IV. DISCUSSION

In this present found 2532 samples for testing nCovid-19 were received and 77.1% were tested with pendency of 22.1% samples. Results were declared of 96.67% of tested with result awaited of 3.33% samples and positivity rate 1.92%. Indian studies are very few regarding positivity rate of samples tested for nCovid-19 by RT-PCR so the present studies were compared from studies conducted in China as this epidemic first emerge in China so many studies were from there only. Chinese studies[13-15] reported very high positivity rate in comparison of present study, it may be because its peak of epidemic in Chian whereas its starting in India. Chinese studies[13-14] reported positive rate of RT-PCR for nCovid-19 38% in one and 59% in another studies which were conducted in Wuhan city of China on 4880 and 1014 suspected symptomatic cases. Yang Y etall[15] did a study for evaluating the accuracy of different 866

respiratory specimens in the laboratory diagnosis for nCovid-19 2019-nCoV infections and found the positivity rate varies from 30% to 60% in different type of specimens.

It was also reported that positivity of oropharyngeal swabs was less than nasal swab.[15,16] Another fact was observed regarding RT-PCR testing for nCovid-19 that the RT-PCR results usually become positive after several days (2-8 days) of infection.[17] Yang Y etall[15] also reported that a number of external factors may affect this positivity of RT-PCR in diagnosing nCovid-19 like specimen source, sampling time, performance of kits etc.

In present study, time lag in sample received and result declared was found 0.89±0.31 days. In Madhya Pradesh, West Bengal and Gujarat it takes up to five days as compared to a day in Andhra Pradesh and Telangana.[18] Like Andhra Predesh and Telangana in present study also it is about one day. State officials said that it is due to huge pressure on government labs to conduct Covid-19 tests because they are free; private labs charge Rs 4500 for each test. One day time lag is justifiable as this test takes time. After tacking swab, specimen is processed to extract the virus's RNA in the laboratory. If laboratory has RNA extractor then extraction of RNA became earlier. After extraction of RNA, it goes to it carefully mix with special chemicals and run those combinations in a machine for analysis, a process called polymerase chain reaction to give diagnosis of that sample.[19] In laboratory of Medical College Dungarpur there is no RNA extractor then also time leg is less than one day which is justifiable. .

V. CONCLUSION

In the present study, 77.1% were tested with pendency of 22.1% samples and positivity rate of samples tested by RT-PCR test for nCovid-19 was found 1.92% with mean time lag less than one days (0.89±0.31 day). Among positive cases mean age was found 34.05±16.28 years with M:F 4.5. Majority of positive cases were from Aaspur area of Dungarpur so containment measures should be directed mainly towards this area.

CONFLICT OF INTEREST

None declared till now.

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