Review Article

Asymptomatic COVID-19 patients and possible screening before an emergency aerosol related endodontic protocols in dental clinic-A Review

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Abstract

Dentistry is related to the cure of oral and dental infections, so exposure and proximity of dental practitioners to oral and nasal fluids of a patient is very obvious. Before you proceed for an aerosol-generating procedure like RCT, and crown preparations, diagnosis, and screening of COVID-19 is very important, as failure may end up infecting yourself and would become a source of infection to your patient community. Due to limitations of data, medicines, and PPE shortage all around the world, screening of asymptomatic carriers of COVID-19 is very troublesome but necessary. To avoid any silent positive patient, the possible way is to ensure mandatory testing of every patient before you treat it. As the door to door surveillance of COVID-19 patients seems near to impossible in the Pandemic era for densely populated developing countries like India. The possible screening regimes include personal surveillance and contact tracing in the very first appointments. So, on the basis of the knowledge and sources we have so far, we have tried to classify the asymptomatic patients seen in the clinics and their possible screening management there. As it is said classification of a disease, is the first step toward a deep understanding of it. After screening, suspects can be sent to more resourceful places for their managements, and incidences of community spread of the disease through dental clinics can be avoided.

Keywords: Aerosols, antibody test, COVID-19 asymptomatic carriers, screening in dentistry

Introduction

COVID-19 is a real mystery box for the world, and one of the biggest mysteries is to screen silent carriers of the lethal disease in the dental clinics.[1] Although government bodies are engaged in activities for the identification of silent and potential carriers, but yet is a very tough task, and it is nearly impossible to screen the entire population of huge nations, which are very densely populated. Asymptomatic patients are those, which do not develop any sign or symptom of the disease means no fever, no cough, and no breathing issues or maybe very mild symptoms.[2] These patients who are confirmed by the laboratory contributes towards the asymptomatic transmission of COVID-19 very efficiently.[3] These people can easily skip and escape the common screening processes like thermal devices or thermal screenings[4] and also they feel no need for any medical help for them and end up infecting elders and less immune patients.[3]

In case of dental clinics, aerosol generation is main culprit of the COVID-19 spread, Endodontic treatments, crown preparations, and even a minor carious lesion often involves use of Air-rotor

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hand pieces and coolants which can transmit infections among dentist and patient community.[1] Also saliva is said to be contain COVID-19 genetic materials, which can spill the beans during dental treatments. Also, there are highest chances for a dental hygienist, dental practitioner, endodontist, or an oral surgeon getting infected from asymptomatic carriers. Contract tracing and personal surveillance of symptomatic cases has revealed cases of asymptomatic transmission, confirmed by WHO and ICMR reports.[2]

The probability of screening an asymptomatic carrier depends upon the presence of mind of a practitioner, while interacting with every patient visiting to his clinic, assuming everyone is infected case. The contact tracing and personal surveillance fundamentals can be applied during history taking of the patients.

Evidence

According to WHO, 80% of the cases were asymptomatic for COVID-19 virus when tested worldwide,[5] in China almost 43000 and South Korea 30,000, people were asymptomatic.[6] According to ICMR, almost 69% of patients were asymptomatic or mild, when tested for COVID-19 in India. When data from 10 states were analyzed there was found the majority of silent carriers, which was approximately 2/3 of the screened people. Data reveals, of total COVID cases in Punjab, Karnataka, Maharashtra, and Uttar Pradesh states, almost 70%, 50%, 65%, 75%, respectively cases were with no or mild sickness.[7] In Mumbai, almost 50 out of 53 media personals were tested positive with zero symptoms, which had increased the fear of silent infection spread in the country.[6] In Jaipur, the four Gastro surgeons went positive after operating upon an asymptomatic patient.[8] In Delhi, 186 people were found to be an asymptomatic carrier in a random sample of hotspot area.[6] A study on the Chinese population in Wuhan has shown family members and 8 laboratory staff as asymptomatic carriers of infection along with a severe case.[9]

Discussion

The incubation period of the COVID-19 infection is said to be between 7 and 24 days, which means it takes a week minimum to appear the symptom but meanwhile a carrier can infect the clusters.[3] Also, many persons have reported being taken antipyretic to escape the airport and other thermal screenings.[4] Depending upon the possibilities there can be many reasons for a patient to be asymptomatic but a carrier of infection, which includes patients with good immunity,[1,9] incubation stage,[1,9] rapid testing kits go wrong,[3] iatrogenic causes, medicine suppressing symptoms,[4,10] younger age group,[1] and maybe a recovered person. As it is said classification of a disease, is the first step toward a deep understanding of it. After screening, suspects can be sent to more resourceful places for their managements, and incidences of community spread of the disease through dental clinics can be avoided.

Table 1: Jethi's Classification for asymptomatic patients seen in dental clinics

Types	True Asymptomatic	Pre symptomatic	Pseudo asymptomatic
Reasons	Good Immunity Young age Recovery Not infected	Incubation period Iatrogenic Causes	On medicine Rapid testing kit errors Iatrogenic

Jethi's Classification for asymptomatic patients seen in dental clinics: [Table 1]

Possible regimes to screen asymptomatic carriers at dental clinics

Mass screening or door to door screening, contact tracing, and community surveillance can be implicated to find out high-risk silent infectors,[6] the ultimate goal is to home quarantine the suspects before the test reports are done and further treating them in early stages. The first rule of treatment in the COVID pandemic is to assume every patient as COVID-19 patients, follow safety guidelines and PPE requirements[7] The first moment, when a dentist would have a patient in the clinics, should look for symptoms. The investigations start from there only, having temperature with a thermal scanner, O2 saturation level with pulse-oximeter, etc., symptomatic patients can be screened.[1] There are high possibilities, very obvious to have an asymptomatic carrier in dental setups, and to diagnose them for the safety of ourselves and community is necessary. Before we treat a patient for an aerosol-generating procedure, following investigations should be made:

(a) PERSONAL SURVEILLANCE

1. Travel histories

Persons who had been to the hotspots have developed symptoms[23] afterward and some of them were asymptomatic to airport screening,[4] but found to be positive on testing with gold standards, so every person who had been to hotspots of spreads should be tested before any treatment at your Clinic. Lie detection and deception should be considered while taking histories of traveling.[5,11,12]

2. Home Quarantine Seals

All the people with travel histories are usually, home quarantined on their return, samples were sent to confirm their status about the disease. The ink they use to stamp for quarantine does not fade for 14–21 days. These stamps are usually done by the wrists and other body parts of the patients. These stamps can help in a dental clinic to further question about their disease status. If a person comes to a dental clinic in a quarantine period, his or her status must be confirmed before treatment.[13]

3. Occupation

Because of the lack of provision of PPE or even after using proper types of equipment and workload,[22] doctors and their

staff have found to be positive and asymptomatic carriers.[8,14] Police, bankers, and sanitary staff, which are doing duties in the lockdowns and indulge in jobs where interactions with infected persons and stuff are provident, possibilities of finding an asymptomatic infector is high among these professionals.[23] Such people should be respected as per their great services but necessary tested before you provide any treatment.

4. Previously positive case

Due to errors in rapid testing kits, it has been found at many places that people are turning false negative for the infection and have no symptoms now. In Italy, Spain, and India rapid test kits exported from China have been found inaccurate.[15] It is still a dilemma that a recovered person can infect or carry the virus to others or is immune to the same for the future.[16]

5. Persons on medicine

The persons taking anti pyritic or on cough syrups could be asymptomatic carriers,[4] especially with travel histories or family clusters, such persons should be screened before any procedure.[10]

(b) CONTACT TRACING

Data have shown, in symptomatic or confirmed cases, the huge possibility of personals infecting their contacting persons, so contact tracing for all the symptomatic cases is necessary to find out asymptomatic carriers. If already a person of the town or city has been diagnosed positive for infection, their family and everyday contacts should be traced and compared with the patient before you, to evaluate an asymptomatic carrier.

1. Family Clusters[9]

People living with infected members, could be the most probably infected carrier.[9] So, family history is an important marker to screen asymptomatic patients. Reports of infecting 19 others from 70-year-old male in Punjab province of India died of COVID-19 has been reported, which had been returned from Italy and had not spotted by thermal screenings at the airport.[11]

2. Attendees of huge gatherings of positive cases

In India, the biggest cluster of COVID-19 was attendees of a religious event with 1500 suspects of symptomatic and asymptomatic patients spreader all over the nation, the attendees of such large gatherings should be screened before procedures.[5,6,12,]

3. No social distancing

Places where social distancing is not possible like slums.[17]

Screening Form for COVID-19 Infections must include the mentioned questions, to find out probability of having a asymptomatic patient before an aerosol generating procedure: [Table 2]

Table 2: Screening Form for COVID -19 Infections must include the mentioned questions, to find out probability of having a asymptomatic patient before an aerosol generating procedure

NAME OF THE PATIENT:	AGE/SEX:
ADDRESS:	
MOBILE NUMBER:	OCCUPATION:
E-MAIL ID:	

PATIENT SURVILLANCE QUESTIONIRE	YES/NO
Do you have fever, cough, sneezing, sore throat, fatigue, myalgia?	
Do you have difficulty in breathing?	
Have you travelled outside the countries in past 30 days?	
If yes mention the country	
Have you travelled inside the country to other cities in past fifteen days?	
If yes mention the city	
Have you met any confirmed COVID-19 or suspicious patient in past 15 days?	
Have you been to any hospital or health care facility in past 15 days?	
Have you taken any medicine before coming for the dental visit?	
If yes mention the medicine	

COVID-19 screening tests

Dentistry is also threatened due to this contagious disease both financially and physically. People all around the world are getting infected and the graph is not flattening down.[1] Even thermal scanning has failed drastically in the case of silent carriers.[4,10] If it is difficult to diagnose such asymptomatic cases it is much easier for the health workers and patients to get infected.[14] There are places on the map where this pandemic is in stage 3 or stage 4, where even victims do not even have travel histories or no clue of the previous contact.[2] It is a very frequently asked question is how you can differentiate an asymptomatic carrier from the rest of the crowd in stages 3 or 4 of the Pandemic. The simplest version of the answer is by testing each and every patient on the board.[18] It is a difficult but best possible way available to scan the asymptomatic carriers.[6,12,] To minimize the threat caused, it should be mandatory to go for a test before any dental procedure as a dentist is in direct contact with nasal and oral fluids.[18] There are two types of test for the infection viral test (tells current situation) and an antibody test (tells past situation).[19,24,25] Limitation in the scope of the possible testing measures is that even if you are not tested positive for the viral test, it's your report limited to the period of time when samples were taken means precautions still to be followed. You could have antibodies but no symptoms for the infection; it indicates you are an asymptomatic carrier.[16]

According to ICMR guidelines, in people living in Hotspots or clusters, they should be confirmed about their infection status, within 7 days with rRt-PCR and after 7 days—with an antibody test. Asymptomatic persons living indirect or high contact with infected persons should be tested after 5 days and 14 days in between to get the confirmation. Various rapid test kits are available now, which can give you results in hours. but the failure rate of these kits is a real issue of worry.[20] Although, the centers and availability are limited more testing will lead to more screening of the virus and would help in slowing down of infection rate, till the vaccines are invented. In India, according to ICMR, nearly 82 centers are providing rapid PCR testing for the virus, situated in various medical and healthcare hospitals in various cities.[21]

Conclusion

It should be made mandatory to go for a COVID-19 test to check for an asymptomatic carrier, before any dental treatment done. It would help government and dentist both to prevent the spread, even from asymptomatic patients. Though it may raise the treatment cost but can minimize the chances of infection.

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Conflicts of interest

There are no conflicts of interest.

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