Medicolegal cases : A Potential Source of Coronavirus (SARS-CoV-2) Infection in Indian Police Personnel

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Abstract

India accompanies the world witnessing a rapidly spreading global pandemic of Covid-19. On 24 March, the Government of India ordered a nationwide lockdown that triggered the mass migration of daily wages workers back to their native states. Without prior testing for SARS-CoV-2, it imposed a new challenge towards the authorities to prevent the possible spread of infection. The study aims to determine the infection status of migrants who died in the jurisdiction of Varanasi district during their journey and the possible risk of spread of Covid-19 to frontline workers. The study was conducted between 24 March 2020 and 10 July 2020. A total of 6 cases came to our department who died during travel. The nasopharyngeal and oropharyngeal swabs were taken after the body arrived in the mortuary and sent for detection of SARS-CoV-2 by RT-PCR method to the Viral Research and Diagnostic Laboratory (VRDL), Department of Microbiology of our Institute. A total of six cases were included in this study, of which 3 were *positive* for SARS-CoV-2 while others were negative. None of them had symptoms of Covid-19 infection, such as respiratory difficulties, sore throat or fever. The guidelines issued by the Ministry of Health and Family Welfare were limited in scope to hospital deaths and lacked guidelines to be followed by police personnel while investigating unnatural deaths. This brings the police personnel at risk of contracting Covid-19 infection as the cases are getting tested after the arrival at mortuary. The only way of protection is prevention, which mandates laying down the guidelines at the earliest.

Keywords : *Covid-19, migrants, medicolegal cases, police, guidelines*

Introduction

India accompanies the world witnessing a rapidly spreading global pandemic of Covid-19. On 31 December 2019, the Wuhan health commission reported the first case to the country centre of disease control (CDC) and WHO with pneumonia of unknown diagnosis in Wuhan, China. With the accelerated transmission and mortality of disease, the WHO declared it as a public health emergency of international concern and outbreak on January 30, 2020. On February 11, 2020. Covid-19 was named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). As the continuous expansion and transmission of diseases continued and affected several countries, the WHO declared Covid-19 as a pandemic on 11 March 2020 [1].

In India, the 1st case of Covid-19 was reported on 30th January 2020, and the first death was reported on 12 March 2020. On 22 March, India observed a 14-hour voluntary public curfew at the request of the government. With the rapid increase in the number of cases, on 24 March, the Government of India ordered a nationwide lockdown for 21 days, affecting the entire 1.3 billion population of the country. With a highly contagious nature of infection and an increase in the

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number of cases, on 14 April, the government of India extended the nationwide lockdown until 3 May, which was followed by two-week extensions starting 3 and 17 May with substantial relaxations [2-4].

Since 1 June 2020, the government has started unlocking the country in three unlock phases by dividing the area into different zones on the basis of infection - (i.e. the area). Red, orange and green hot spot and barring containment zones.

With factories and workplaces shut down and the lockdown imposed on the country, millions of migrant workers were left with no livelihood. They had to deal with income loss, food shortages and unpredictability about their future. Subsequently, hunger and insufficient food stocks became a bigger curse for them and their family. The nationwide restriction ceased daily wage workers at their place with no work and money, and they initiated walking or bicycling hundreds of kilometres back to their home district, with transport restrictions due to the lockdown. The government protection norms of sanitation and social distancing could not be followed by these migrants since they travelled together in large groups [5-8].

Even though later in May the government launched special trains and buses, due to starvation and lack of money, the migrant chose to travel in the cargo compartments of trucks and containers or travel by foot together in large groups ruining the corona protection norms [9].

More than 300 deaths were reported until 5 May 2020 due to reasons other than Covid-19 because of unplanned migration of daily wage labourers and marginalized migrants. Eighty deaths were reported on the Shramik Special trains while travelling back home: in a period of a month, they had begun [10-12].

This massive migration without prior testing for SARS-CoV-2 imposed a new challenge towards the authorities to prevent the possible spread of infection.

The study aims to determine the infection status of those migrants who died in the jurisdiction of Varanasi district during their journey and the possible risk of spread of Covid-19 to the Frontline workers through them.

Material and method

The cases for this study were selected from the dead bodies of migrants brought into the mortuary of our department for medicolegal postmortem examination from the various police stations of Varanasi. The study was conducted between 24 March 2020 and 10 July 2020. A total of 6 cases were reported in our department with death during or after travel.

History regarding the symptoms before death and circumstances of death were collected from the following sources:

(1) The papers sent by police for medico legal autopsy:

(a) Inquest report,

(b) Copy of the first information report (F.I.R.),

(e) Hospital records/reports if available, etc.

(2) From the interrogation of the concerned personnel –

(a) Police constables accompanying the dead bodies, and

(b) Attendants/relatives, friends and others of the victim.

The nasopharyngeal and oropharyngeal swabs were taken after the body arrived at our mortuary and were sent for detection of SARS-CoV-2 infection by RT-PCR to the Viral Research and Diagnostic Laboratory (VRDL), Department of Microbiology of our Institute.

Results

Case 1 – A 45-year-old male started walking from New Delhi towards Bihar. He died in Varanasi jurisdiction on 16/04/20. The body was sent for autopsy. Keeping in view the history of travel from New Delhi and the history of tachypnoea before death (mentioned in the inquest report), autopsy was withheld, and swabs were taken on 17/04/2020. Report – negative on 18/04/20. Later, autopsy was conducted, and it was concluded that death was due to starvation.

Case 2 – A 26-year-old male coming from New Delhi by motorcycle met an accident on highway in Varanasi

jurisdiction. He immediately fell unconscious and was admitted to the district hospital. He died, and the body was sent for autopsy on 04/05/20. Report – negative on 06/05/20. Later, autopsy was conducted, and it was concluded that death was due to head injury.

Case 3 - A 37-year-old male coming from New Delhi met an accident on highway in Varanasi jurisdiction. He immediately fell unconscious and was admitted to the trauma centre of our institute. He died, and the body was sent for autopsy on 04/06/20. Report – negative on 04/06/20. Later, autopsy was conducted, and it was concluded that death was due to head injury.

Case 4 - An 85-year-old male coming from Mumbai by Shramik special train died suddenly on 31/05/2020 during the journey. History taken from relatives revealed 2 episodes of vomiting without any history of fever, sore throat, cough or shortness of breath. There is no evidence of any external injury on the body as per police inquest. Autopsy was withheld, and swabs were taken on 01/06/2020. Report – positive on 01/06/20. The police were informed, and autopsy was waived off.

Case 5 - An 81-year-old male coming from Mumbai by Mahanagari express train died suddenly on 25/06/2020 during the journey. History taken from relatives reveals that he collapsed suddenly while refilling the water on the platform, but there was no history of fever, sore throat, cough or shortness of breath. There is no evidence of any external injury on the body as per police inquest. Autopsy was withheld, and swabs were taken on 25/06/2020. Report – positive on 27/06/20. The police were informed, and autopsy was waived off.

Case 6 - A 28-year-old male came from New Delhi to Azamghar (Uttar Pradesh) by personal vehicle on 04/07/2020. He was admitted to the Trauma Centre of our institute on 06/07/2020 with a history of head injury caused by alleged assault. There was no history of fever, sore throat, cough or shortness of breath. Swabs were taken on 07/07/2020. Report – positive on 07/07/2020. He died on 07/07/2020, and the body was sent for postmortem examination. The autopsy was conducted with proper precautions, and the cause of death was injury to the head.

Discussion

A total of six cases were included in this study, of which 4 arrived from New Delhi, while the other two arrived from Mumbai. The test reports of the 3 deceased who arrived from New Delhi were 'negative', and their autopsy was conducted afterwards. The remaining 3 deceased tested positive, of which 2 had travelled from Mumbai via train and one from New Delhi by personal vehicle. The police and district administration were informed immediately, and autopsy was waived off by the police in case numbers 4 and 5, while autopsy was conducted with proper precautions in case number 6. After being disinfected by 1% sodium hypochlorite solution, all the bodies were handed over to the police in a leakage proof body bag (disinfected by 1% sodium hypochlorite solution on the exterior) for cremation.

Symptoms of the deceased

As per the history taken from relatives, co-travellers and police, none of them had symptoms of Covid-19 infection, such as respiratory difficulties, sore throat or fever. Instead, there was a history of vomiting just before death in one (case 4) and sudden collapse of the other (case 5), and both were aged above 80 years. The exact cause of death could not be established in case numbers 4 & 5 as the autopsy was waived off, while the last patient died due to injury to the head.

In case numbers 4 & 5, it is worth noting that both cases did not have typical manifestations of Covid-19. This could mean either they were asymptomatic and died due to some other underlying cause, or they died from Covid-19 with atypical presentations. Most pathological studies are in consensus with the clinical features and clinical course of the disease in general. However, the disease is also known to cause pathological damage to organs such as the heart, liver, kidney, brain, blood vessels and other organs.

Meghan E. Sise et al. (2020) presented a case report titled 'Case 17-2020: A 68 year old man with Covid-19 and Acute Kidney Injury' who was finally diagnosed with acute kidney injury and its connection with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection [13].

Carolin Edler et al. (2020) conducted an autopsy - based study titled Dying with SARS-CoV-2 infection—an autopsy study of the first 80 consecutive cases in Hamburg, Germany. Out of 80 cases studied aged

between 52 and 96 years, corresponding to three different categories, 76 cases (95%) were classified as COVID-19 deaths, whereas four deaths (5%) were defined as virus independent non-COVID-19 deaths. Pneumonia accompanied by a fulminant pulmonary artery embolism was observed in eight cases whereas peripheral pulmonary artery embolisms were opined to be the cause in nine cases. Deep vein thrombosis was present in 40% of the cases. As per the author, this is the largest autopsy based study of patients infected by SARS-CoV-2 [14].

Andrews et al. conducted a case study titled "First confirmed case of COVID-19 infection in India: A case report" describing a female aged 20 years returned from Wuhan, China on January 23rd 2020. Initially, she only had mild sore throat and rhinitis. She was conscious, oriented and afebrile, with other findings such as pulse rate 76/min, blood pressure 100/70 mmHg, respiratory rate 12/min and oxygen saturation 97 percent in the free atmosphere. General examinations were within normal limits, and she recovered well on symptomatic treatment [15].

Raman Swathy Vaman et al. (2020), in their study titled "A confirmed case of COVID-19 among the first three from Kerala", India, reported a male medical student aged 23 years studying at Wuhan University, China returned to Kasaragod on 27 January. He developed mild infection in the upper respiratory tract on 30th January. The next day, he was admitted to the District Hospital Kasaragod. On physical observation, the patient was conscious, oriented and afebrile, with no paleness, icterus, cyanosis, clubbing, oedema or lymphadenopathy. Blood pressure was 118/78 mmHg, pulse rate was 88/min and respiratory rate was 14/min. Cardiovascular and respiratory systems were normal. Mild congestion of the throat was reported without any significant enlargement or membrane seen in the tonsil [16].

Lechien, J.R et al. (2020) conducted a study titled Olfactory and gustatory dysfunctions as a clinical presentation of mild-to-moderate forms of coronavirus disease (COVID-19): A multicentre European study investigating the dysfunction in confirmed COVID-19 infected cases concluded that as the disease and the virus both are just out and still evolving. As per the study, the infected patients may present solely with dysfunctions of the olfactory and gustatory systems without other symptoms, and it should be recognized as an important symptom of COVID-19 infection by the international scientific community [17].

J.E. Morley and B. Vellas (2020) in an editorial titled Covid-19 and older adults stated that seriously affected patients with acute respiratory distress syndrome can develop myocardial illness leading to mortality along with kidney and liver disease. They also stated that COVID-19 affects the central nervous system by invading it, which causes a rise in inflammatory cytokines expected to be responsible for delirium. Older people may experience an increase in delirium even without a high fever, which is uncommon in comparatively young people [18].

Government of India guidelines regarding autopsy of Covid-19 positive medico-legal cases

As per the available scientific literature to date, the survival of viruses gradually decreases with time in a dead body, but there is no specific time limit to declaring the body noninfective. Therefore, it is advisable to adopt precautions because dead bodies can be a potential source of infection, especially for those who come in contact during the initial period.

The cases of unnatural deaths are medico-legal cases that warrant an investigation into the cause of death by police and autopsy if required. The process is known as ***police inquest*** (Section 174, The Code of Criminal Procedure -1973), which includes visiting and examining the crime scene and the deceased by police and request for an autopsy if required. This means police is the first responder if such a death occurs outside the hospital, which makes them vulnerable to contracting the infection.

There is a comprehensive guideline issued by the Ministry of Health and Family Welfare (MoHFW) dated 15/03/2020 titled - 'Covid-19: Guidelines on Dead Body Management.' The guidelines were based on the current epidemiological knowledge about the COVID-19. At that time, India had travel- related cases and few cases of local transmission. At that stage, all suspected/confirmed cases were isolated in a health care facility. Hence, the document was limited in scope to hospital deaths [19].

This document was, however, coming up short of a guideline to be followed by police personnel while visiting at a crime scene, investigating, handling and transporting a case of unnatural death. As mentioned above, all the cases were tested for Covid-19 after they arrived at mortuary or hospital. The police, unaware regarding the Covid-19 status of the deceased beforehand, did not follow the standard precautions such as the use of personal protection equipment while investigating, handling and transporting such cases to the mortuary for medico-legal autopsy. This brings the police personnel and all those involved at risk of contracting Covid-19 infection as the cases are getting tested after the arrival at mortuary.

This is happening as India lacks a proper guideline to be followed by police while handling medico-legal cases. With cases increasing exponentially, this is of utmost importance to lay down at the earliest, a guideline for the police in handling the unnatural deaths in medico-legal cases, train them for the same and provide them with sufficient resources to protect themselves from contracting the Covid-19 infection.

The following propositions can be considered while drafting the guidelines:

1. It is in goodwill of the police that Covid-19 testing should be done in every case of unnatural death before starting the inquest, preferably at the site of death rather than waiting for a day or two.

2. If the case is positive, the police must use personal protection equipment (PPE kit) during the investigation and transportation of the body.

3. Autopsy to be done in very selective cases.

Conclusion

The current pandemic is still ongoing, and the scientific community is still learning new things about this disease. The only way of protection is prevention, especially in the case of frontline workers, be it healthcare workers or police. This mandates laying down the guidelines at the earliest.

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