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Forensic Pathologist's Dilemma in the wake of COVID-19 Pandemic

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To the Editor,

The role of forensic pathologist is imperative for investigation of pathophysiological outcome of disease by conducting autopsy or post-mortem examination. Autopsy examination becomes highly significant when the cause of death is unknown or physicochemical parameters of death is of unknown nature due to novel emerging conditions as in case of novel coronavirus pandemic. In the wake of COVID-19 pandemic, there is undeniable amount of pressure on the forensic examiner fraternity due to the highly contagious nature of new coronavirus (SARS-CoV-2). Autopsy involves thorough external examination of the deceased body followed by gross internal, histopathological examination of organs and molecular analysis of body fluids for various tissue specific and blood biomarkers (enzymes, electrolytes, hormones) to ascertain disease progression and cause of death. Since the emergence of novel coronavirus (SARS-CoV-2) in Wuhan, China in December 2019, it rapidly spread across the globe at an alarming rate with WHO characterized COVID-19 as a pandemic on 11 March 2019 due to severity. As per the latest WHO situation report on December 09, 2020, there are 67,210,778 confirmed positive cases of COVID-19 including 15,40,777 deaths which involves approximately 2-5% healthcare workers (1,2). The present work focus on the standard operating procedures has to followed by Forensic Pathologist's.

Severe COVID-19 cases have exhibited diffuse alveolar damage characterized by cellular fibromyxoid exudate, desquamation of pneumocytes and hyaline membrane formation leading to acute respiratory distress syndrome (ARDS). Some patient reports also suggested damage to lower gastrointestinal tract, kidney and liver. Strokes, seizures, mental confusion, and brain inflammation

have also been reported in some COVID-19 patients. Some other symptoms also involve conjunctivitis, loss of sense of smell, cardiac inflammation (3,4).

Various studies have been carried out based on epidemiology and clinical findings. However histopathological examination of tissue samples and molecular autopsy reports of COVID-19 cases

are very limited which makes it very difficult to study the disease etiology. Though the current pathological condition and underlying mechanism of COVID-19 has become possible because of the undying effort of pathologists and healthcare workers, they are at greater risk of contracting the disease due their close contact with the patients and deceased (5).

The novel coronavirus (SARS-CoV-2) is highly contagious in nature and it may remain viable on inanimate surfaces (plastic, glass, metal surfaces) and in aerosol upto several days (6). Therefore, its transmission in healthcare set-up can only be prevented through heightened decontamination process and personal hygiene. In wake of COVID-19 pandemic, CDC and WHO have recommended certain guidelines for forensic pathologists and death-care workers during autopsy examination and specimen collection (in case of suspected or confirmed COVID-19 cases) as a precautionary measure, which may be described as follows (7,8);

- Ensure use of PPE (personal protective equipment) (sterile, long-sleeved, fluid resistant autopsy suite

along with double surgical gloves for enhanced protection) along with FFP2 respirator mask
- Face shield and goggles should be used for facial protection
- Biosafety cabinet should be used for analysis of smaller specimen
- Avoid aerosol-generating procedures
- Proper training of medical examiners or autopsy technicians regarding decontamination,
- sterilization and hygiene
- Treatment of autopsy area with disinfectant before and after autopsy examination
- Follow appropriate disposal procedure for used PPE and regulated medical waste
- Minimal invasive procedure for sample collection followed by sample storage at 2-8°C till
- further analysis (for longer duration, the sample may be stored at -80°C)

During this pandemic, when social distancing has become a routine norm for containment of COVID-19 spread, the same may not hold true for several frontline workers (Government officials, NGO staff responsible for distribution of food, medicine and other essential commodities, Law enforcement authorities) and healthcare workers, hospital staff being the most vulnerable ones to contract the highly infectious disease due to their nature of duty. Therefore, it is recommended that, strict compliance of standard operating procedures, proper training and increasing awareness along with adequate supply of PPE are crucial for prevention of potential transmission of human coronavirus among healthcare professionals.

Abbreviations

COVID-19: Coronavirus Disease 2019; SARS-CoV-2: Severe Acute Respiratory Syndrome (SARS)-coronavirus-2 (CoV-2); CDC: Center for Disease Control and Prevention; PPE: Personal Protective Equipment

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