

## HOW TO DEAL COVID-19 IN RADIOLOGY?

World is suffering through a global health emergency due to highly contagious novel coronavirus (COVID-19). COVID-19 is associated with significantly high reported morbidity and mortality caused by pneumonia especially in old age and compromised population. Due to its rapid spread in more than 150 countries so far, World Health Organization (WHO) has called it a pandemic which has resulted in an ongoing global lock down.

Coronaviruses belong to Coronaviridae family and are nonsegmented, enveloped, positive-sense, single-strand ribonucleic acid viruses.<sup>1</sup> So far six types of coronavirus have been identified in human: four cause mild respiratory symptoms, whereas the other two MERS (Middle East Respiratory Syndrome (MERS-detected in 2012 in Saudi Arabia)<sup>2</sup> and SARS (Severe Acute Respiratory Syndrome-detected in 2003 in China)<sup>3</sup> have caused epidemics with high morbidity and mortality. In December 2019, Wuhan, China came into limelight due to the outbreak caused by a new coronavirus labeled as COVID-19 found in bronchial secretion of patients presented with fever, fatigue, dry cough, and respiratory distress. The COVID-19 has a mean incubation time of 5.2 days which allows its dissemination by travellers globally by human to human transmission.

Chest X-ray and CT examinations play a critical role in assessing severity and disease progression in COVID-19 associated pneumonia (Novel COVID-19 Infected Pneumonia; NCIP). A recent report from China published in recent Lancet issue described the manifestation of NCIP in 41 patients.<sup>4</sup> This early report shows bilateral air-space opacities/ infiltrates and no pleural effusion. But progressive worsening of bilateral consolidation is seen in patients developing severe pneumonia. CT scans of non-ICU patients show transient areas of subsegmental consolidation with bilateral ground-glass opacities in later course of the disease. CT scans in first 09 patients with documented NCIP in Wuhan, China shows (1) ground-glass opacities (100%); (2) involvement of multiple lobes (100%); (3) subpleural or peripheral distribution, often central-sparing (100%); (4) consolidations (77.8%); (5) septal thickening (55.6%); (6) bronchial dilation and wall thickening (55.6%). Importantly CTs show no pleural effusion or lymphadenopathy or lung nodule in these patients. However, these imaging features are non-specific and resembles with MERS, SARS, H1N1 influenza, cytomegalovirus or atypical pneumonias.<sup>3</sup>

Since COVID-19 is highly contagious and transmits through respiratory droplet, radiographers are among the first-line health care workers who might be exposed to COVID-19. According to recent WHO recommendation healthcare worker engaged in imaging must use respiratory protection with use of a medical mask, disposable isolation gown with fluid-resistant characteristics, a pair of disposable gloves with coverage over gown cuffs, eye protection with goggles, and probably a face mask over goggles.<sup>5</sup> For the purpose of diagnostic imaging in individuals with NCIP, whenever possible, portable radiographic equipment should be used to limit transportation of such patients. CT and MR machine gantries, noninvasive ultrasound probes, blood pressure cuffs, and image viewing station, mice and keyboards need to be disinfected after every contact with suspected patients. According to Centers for Disease Control and Prevention (CDC) and Food and Drug Administration (FDA) guidelines, these surfaces need to be either washed with soap and water or decontaminated using a disinfectant, such as iodophor germicidal detergent solution, ethyl alcohol, or isopropyl alcohol.<sup>5</sup>

In summary, imaging features of COVID-19 pneumonia are highly nonspecific and are more often bilateral with subpleural and peripheral distribution and range from ground-glass opacities in milder forms to consolidations in more severe forms. Initial reports show absence of pleural effusion or lymphadenopathy or lung nodule in these patients. Every radiology department must have guideline to protect its staff and faculty and avoid dissemination of highly contagious COVID-19.

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