

**Editorial****The Role of CT in Diagnosis of Infectious Diseases**

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Computed tomography (CT) is a diagnostic imaging modality that has been widely used for evaluation of various clinical problems. Although CT involves exposure of patients to ionizing radiations, its use with valid medical reasons and proper examination protocols aiming to minimize radiation dose while ensuring good diagnostic quality is still considered beneficial for the diagnosis and treatment of disease processes from head to toe.<sup>1</sup> Due to its widespread availability and short examination time, CT is frequently the first examination performed in acutely ill patients.

In patients with infectious diseases, CT can help locate the organ of involvement and delineate the extent of the disease process. When tissue diagnosis is required, CT can be used to guide for biopsy or drainage of the lesions which cannot be clearly visualized on ultrasound or when precise needle location cannot be identified by ultrasound such as lung, spinal, and in some liver lesions.<sup>2,3,4</sup> Although CT has less soft tissue contrast when compared with MRI, its soft tissue contrast can be improved by the use of intravenous contrast materials. Multiplanar capability and post-processing software of modern CT machines can further improve visualization, or in some instances can help characterize the lesion. In cases with characteristic CT findings of abscess, treatment by drainage or administration of antibiotics can be promptly given.

In Central Nervous System (CNS) infections, CT is useful for distinguishing secondary encephalopathy from direct CNS damage.<sup>5</sup> Where cortical bone erosion or destruction is suspected, CT can provide images with high spatial resolution.<sup>6,7</sup> With contrast enhanced CT technique, vascular

complications of infectious process such as head and neck infections can be readily identified.<sup>8</sup> CT is the modality of choice with high sensitivity and specificity for the diagnosis of gas-forming or emphysematous infections where abnormal gas location and extent are reliably depicted.<sup>9,10</sup> High resolution CT (HRCT) of the lungs plays an important role in diagnosis of pulmonary infections. Certain signs and patterns shown on CT and HRCT images can narrow down the differential diagnoses and sometimes can indicate a specific type of infection in both immunocompetent and immunocompromised patients.<sup>11,12</sup> During the COVID-19 pandemic, although there is no consensus to suggest the use of CT as a screening tool for asymptomatic patients and patients with mild respiratory symptoms, CT can help suggest an alternative diagnosis in patients with moderate to severe respiratory symptoms and can be useful in patient triage especially when there is false-negative RT-PCR test. In some patients who undergo CT for other body regions, the findings in the included chest may suggest the presence of COVID-19 infection. In addition, CT can help in the diagnosis of cardio-pulmonary complications of COVID-19 infection such as ARDS, pulmonary embolism, superimposed infections or heart failure.<sup>13</sup>

In conclusion, when weighing its benefit in providing diagnostic information with high availability and fast speed of examination against the risk of exposure to ionizing radiation, the usage of CT under the supervision of qualified and responsible medical personnel who ensure the application of “as low as reasonably achievable” (ALARA) radiation dose is still considered appropriate.

### References

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