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A Call to Action

The Need for Autopsies to Determine the Full Extent of Organ Involvement Associated With COVID-19



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The purpose of this letter very simply put is, a “call to action” for complete, detailed autopsies of patients who have succumbed to infection with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), leading to 2019 coronavirus disease (COVID-19). There have been a number of reports^{1,2} describing large case series of patients who have been infected with the COVID-19 virus, a subset of whom have died as a result of their infection. A number of these decedents clinically had involvement of other organ systems besides the lungs. However, to the best of our knowledge, at this point in time, there are only two reports describing pathologic findings in two decedents who underwent autopsies. Liu et al³ recently reported in the *Journal of Forensic Medicine* on their findings in an 85-year-old Chinese man who died of COVID-19. Briefly summarized, the gross autopsy revealed heavy lungs with copious amounts of gray-white viscous fluid, but otherwise the heart, liver, and kidneys were unremarkable. However, no pathologic diagnoses were made and unfortunately histopathologic examination was not performed making this report of very limited

use.³ In contrast to this report,³ Barton et al⁴ have reported on the detailed pathologic findings of two decedents, one of whom succumbed to COVID-19 and the other to an acute bronchopneumonia. The COVID-19 decedent's lungs showed acute diffuse alveolar damage with numerous hyaline membranes. Xu et al⁵ performed “biopsies” of tissue from a 50-year-old man who had died as a result of COVID-19, and detailed information on the histopathologic, but not the gross, changes seen in the lungs, heart, and liver of the decedent were described. On the basis of these “biopsies” both lungs demonstrated changes consistent with diffuse alveolar damage and a clinical diagnosis of ARDS. Interstitial lymphocytic infiltrates were seen in both lungs, and atypical large pneumocytes and cytopathic changes consistent with a viral etiology were identified. A few interstitial mononuclear inflammatory infiltrates were seen in the heart and moderate microvesicular steatosis with mild lobular and portal activity was seen in the liver, which may not have been related to COVID-19. On the basis of lung biopsies of one decedent, Li et al⁶ stated that the changes resembled those seen in patients who had died of sudden acute respiratory syndrome (SARS) and Middle East respiratory syndrome. As suggested by Chen et al,² who reported that diarrhea was seen in patients with COVID-19, there also might have been significant GI pathology. More recently Li et al⁶ have described the neuroinvasive potential of SARS-CoV-2 and suggested that this may play a role in the respiratory failure of patients with COVID-19. In support of this Helms et al⁷ have reported significant neurologic features associated with SARS-CoV-2 infections.

Gu and Korteweg⁸ have described in detail the pathologic findings associated with SARS, and this could serve as a future model for a similar review of the pathology associated with COVID-19. The diverse pathology associated with SARS infections suggests that multiple organ systems are involved in a subset of patients who succumb to COVID-19. Despite the fact that fewer and fewer autopsies are being done throughout the world, they still remain a powerful tool⁹ to better understand the full scope of new and emerging diseases such as COVID-19. On the basis of the tragically increasing number of deaths of patients who have succumbed to COVID-19, we hope that there will be more reports describing in detail the autopsy findings

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of these decedents.¹⁰ This should in turn result in improved treatment strategies for the devoted physicians who are taking care of these patients day after day.

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