

Post-Mortem Diagnostics in COVID-19 AKI, More Often but Timely

Coronavirus disease 2019 (COVID-19) is a new and devastating disease with renal involvement that deserves an intense and collaborative research effort. Golmai *et al.*¹ make use of classic autopsy with the modern modification of postmortem, fine-needle kidney biopsy. Autopsy was originally developed to investigate macroscopic, light-microscopic, postmortem, anatomic and histologic changes associated with disease. Standard autopsy is mildly time sensitive, with autolysis developing several hours after death. However, new developments in pathophysiologic diagnostics—protein, RNA, and DNA analyses—require faster sample handling and careful sample storage to prevent postmortem effects. Golmai *et al.*¹ do not describe how long after death biopsies were performed, but state the majority of samples show signs of autolysis. This precludes protein, RNA, and most DNA analyses because we would be observing mostly postmortem effects. Similar to sepsis, COVID-19 microscopic changes in the kidney are limited, with most studies showing some acute tubular necrosis, which cannot fully explain AKI. A large proportion of renal failure in patients with COVID-19 and those with sepsis seems to be attributed to functional defects without major histologic changes. Therefore, modern protein and nucleic-acid techniques might shed some light on the underlying mechanisms driving renal failure. We have shown that kidney biopsies can be performed at the bedside within 1 hour after death, and that gene expression analyses are feasible.^{2,3} Mortality of patients with COVID-19 was shown to be higher in patients with AKI.⁴ Yet, the mechanisms driving renal failure in patients with COVID-19 still remain largely unknown. Therefore, we plead for more studies to investigate postmortem renal biopsy specimens taken rapidly after death to enable the use of modern molecular diagnostics, together with classic autopsy, to investigate mechanisms of AKI induced by COVID-19.

DISCLOSURES

All authors have nothing to disclose.

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See related reply, “Authors’ Reply,” on pages 255–256, and original article “Histopathologic and Ultrastructural Findings in Postmortem Kidney Biopsy Material in 12 Patients with AKI and COVID-19,” in Vol. 31, Iss. 9, 1944–1947.

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Authors’ Reply

Zijlstra *et al.*¹ question whether delay to postmortem biopsy and ensuing tissue autolysis could have interfered with our molecular diagnostics. They ask how long after death were biopsies done in our study, and suggest that studies using more rapid postmortem biopsy might be more productive. Supplemental Table 1, included in our paper,² provided the times between death and biopsy. Out of 12 cases, 11 were biopsied within 24 hours postmortem; three were performed

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