

University of Groningen

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

Zijlstra, Jan G.; Meurs, Matijs van; Moser, Jill

Published in:
Journal of the American Society of Nephrology

DOI:
[10.1681/ASN.2020091263](https://doi.org/10.1681/ASN.2020091263)

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
Publisher's PDF, also known as Version of record

Publication date:
2021

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Zijlstra, J. G., Meurs, M. V., & Moser, J. (2021). Post-Mortem Diagnostics in COVID-19 AKI, More Often but Timely. *Journal of the American Society of Nephrology*, 32(1), 255.
<https://doi.org/10.1681/ASN.2020091263>

Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

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.

FUNDING

None.

REFERENCES

1. Golmai P, Larsen CP, DeVita MV, Wahl SJ, Weins A, Rennke HG, et al.: Histopathologic and ultrastructural findings in postmortem kidney biopsy material in 12 patients with AKI and COVID-19. *J Am Soc Nephrol* 31: 1944–1947, 2020
2. Aslan A, Jongman RM, Moser J, Stegeman CA, van Goor H, Diepstra A, et al.: The renal angiotensin/Tie2 system in lethal human sepsis. *Crit Care* 18: 423, 2014
3. Jou-Valencia D, Koeze J, Popa ER, Aslan A, Zwieters PJ, Molema G, et al.: Heterogeneous renal injury biomarker production reveals human sepsis-associated acute kidney injury subtypes. *Crit Care Explor* 1: e0047, 2019
4. Pei G, Zhang Z, Peng J, Liu L, Zhang C, Yu C, et al.: Renal involvement and early prognosis in patients with COVID-19 pneumonia. *J Am Soc Nephrol* 31: 1157–1165, 2020

See related Letters to the Editor, "Authors' Reply," on pages xxx–xxx.

Jan G. Zijlstra^{1,2}, Matijs van Meurs^{1,2}, and Jill Moser^{1,2} 

¹Department of Pathology and Medical Biology, Medical Biology Section, University Medical Center Groningen, University of Groningen, Groningen, The Netherlands

²Department of Critical Care, University Medical Center Groningen, University of Groningen, Groningen, The Netherlands

JASN 32: ●●●–●●●, 2021.

doi: <https://doi.org/10.1681/ASN.2020091263>

Published online ahead of print. Publication date available at www.jasn.org.

Correspondence: Prof. Jan G. Zijlstra, Department of Critical Care, University Medical Center Groningen, University of Groningen, Hanzeplein 1, 9700 RB, Groningen, The Netherlands. Email: j.g.zijlstra@umcg.nl

Copyright © 2021 by the American Society of Nephrology