

# HISTOPATOLOGI GINJAL PADA PASIEN DENGAN INFEKSI COVID-19: TINJAUAN *SYSTEMATIC REVIEW*

**Belia Kristina**

## **Abstrak**

*Coronavirus Disease 2019 (COVID-19)* merupakan penyakit infeksius yang disebabkan oleh virus *severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2)* yang diketahui menyerang tidak hanya sistem pernapasan namun juga sistem organ tubuh lainnya. Saat ini muncul berbagai studi yang menemukan bahwa ginjal menjadi salah satu organ yang terdampak dengan berbagai gambaran kerusakan yang berbeda-beda. Penelitian ini bertujuan untuk mengidentifikasi dan mendeskripsikan gambaran histopatologi ginjal yang ditemui pada pasien COVID-19. **Metode:** *Systematic review* dilakukan mengikuti alur *Preferred Reporting Items for Systematic Reviews and Meta-analyses Protocols (PRISMA-P)* tahun 2015 dengan pencarian literatur menggunakan *database PubMed*. **Hasil:** Didapatkan 28 literatur berbentuk *case report* dengan 35 kasus. Gambaran histopatologi ginjal yang ditemukan pada pasien COVID-19 adalah *collapsing* (57,1%) dan *non-collapsing focal segmental glomerulosclerosis* (2,8%), *acute tubular injury* (54,2%), *thrombotic microangiopathy* (5,7%), *minimal change disease* (5,7%), *oxidative stress injury* (5,7%), *membranous nephropathy* (2,8%), *immune-complex mediated membranoproliferative glomerulonephritis* (2,8%), serta *IgA-Dominant Infection-Associated Glomerulonephritis* (2,8%). **Kesimpulan:** Kerusakan ginjal akibat COVID-19 mempengaruhi semua kompartemen ginjal, yaitu glomerulus, tubulointerstitium, serta komponen vaskuler. Mekanisme yang mungkin dapat menyebabkan kerusakan ginjal dibagi menjadi mekanisme langsung yang melibatkan infeksi langsung virus pada jaringan ginjal serta mekanisme tidak langsung yang melibatkan badai sitokin dan disfungsi endotel. Perlu dilakukan penelitian lebih lanjut untuk dapat memastikan mekanisme kerusakan ginjal akibat COVID-19.

**Kata Kunci :** COVID-19, SARS-COV-2, Histopatologi Ginjal, Biopsi Ginjal

# RENAL HISTOPATHOLOGICAL FINDINGS IN PATIENTS WITH COVID-19: SYSTEMATIC REVIEW

**Belia Kristina**

## **Abstract**

Coronavirus Disease 2019 (COVID-19) is an infectious disease caused by the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) virus, known to affect not only the respiratory system but also various other organ systems in the body. Currently, there are several studies that have found the kidney to be one of the organs affected, with various patterns of damage observed. This research aims to identify and describe the histopathological patterns of the kidney found in COVID-19 patients. **Method:** A systematic review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-analyses Protocols (PRISMA-P) guidelines from 2015, with a literature search using the PubMed database. **Results:** A total of 28 case report articles comprising 35 cases were included. The histopathological patterns of kidney involvement found in COVID-19 patients included collapsing glomerulopathy (57.1%), non-collapsing focal segmental glomerulosclerosis (2.8%), acute tubular injury (54.2%), thrombotic microangiopathy (5.7%), minimal change disease (5.7%), oxidative stress injury (5.7%), membranous nephropathy (2.8%), immune-complex mediated membranoproliferative glomerulonephritis (2.8%), and IgA-Dominant Infection-Associated Glomerulonephritis (2.8%). **Conclusion:** Kidney damage due to COVID-19 affects all kidney compartments, including the glomerulus, tubulointerstitium, and vascular components. Possible mechanisms that may lead to kidney damage are divided into direct mechanisms involving the virus's direct infection of kidney tissues and indirect mechanisms involving cytokine storms and endothelial dysfunction. Further research is needed to confirm the mechanisms of kidney damage caused by COVID-19.

**Keywords:** COVID-19, SARS-COV-2, Renal Histopathology, Renal Biopsy