

# BÖLÜM 41



## Covid Ve Perikardit

Gülsüm BİNGÖL<sup>1</sup>

### GİRİŞ

Ciddi akut solunum sendromu koronavirüs 2 (SARS-CoV-2) adı verilen yeni bir koronavirüsün neden olduğu ve Dünya Sağlık Örgütü tarafından Covid-19 (Corona virüs 2019) adı verilen hastalık, Aralık 2019'da Çin'in Wuhan kentinde başlamış ve sonrasında tüm dünyaya yayılarak küresel bir pandemiye yol açmıştır (1).

SARS-CoV-2 son derece bulaşıcı bir hastalığa neden olan pozitif polariteli, tek sarmallı, büyük zarflı, ribonükleik asit (RNA) yapısında bir virüstür. Genetik olarak 2002–2003 yılları arasındaki SARS salgınına neden olan SARS-CoV ile %79, MERS-CoV ile %50, yarasalarda bulunan koronavirüslerle ~%96 oranda benzerlik taşımaktadır (2).

Anjiyotensin dönüştürücü enzim 2 (ACE2), SARS-CoV-2 için reseptör olarak tanımlanmıştır. SARS-CoV-2'nin spike proteini, ACE2'ye bağlanır ve sitozol içine viral girişi kolaylaştırır insan tip II transmembran serin proteaz-2 (TM-PRSS2) tarafından ikiye bölünür. ACE2 ekspresyonu akciğer, beyin, böbrek, ince bağırsak, kolon ve kalp dahil birçok organ için bildirilmiştir (3-5). Dolayısıyla Covid-19 hastalığında, ağırlıklı olarak solunum sistemini etkilenmekle birlikte kalp başta olmak üzere böbrekler, gastrointestinal sistem, beyin ve deri gibi diğer organlar da tutulmakta ve literatürde bu tutulumlara ilişkin çok sayıda vaka bulunmaktadır (6).

Covid-19; asemptomatik ya da hafif solunum sistemi semptomlarından, solunum yetersizliği, septik şok ya da çoklu organ yetersizliği gibi daha ciddi du-

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## SONUÇ

Perikardiyal hastalıkların tanı ve tedavisine yönelik ESC kılavuzlarının yayınlanıldığı 2015 yılından bu yana akut perikardit özellikle COVID-19 aşılması sonrası yan etkiler arasında bildirildiği ve SARS-CoV-2 enfeksiyonunu sonrası gelişip hastalığı komplike hale getirebileceği için son zamanlarda büyük ilgi görmeye başlamıştır.

Covid -19 ile ilişkili perikardit ayrıca Covid-19'a karşı aşılama sonrası da ortaya çıkabilen ve aşılamaya olan güveni etkileyebilecek potansiyel bir komplikasyon olduğundan daha da önemli bir durum haline gelmiştir.

Mevcut kanıtlar, perikardiyal tutulumun Covid-19 hastalığının önemli klinik bulgularından biri olduğunu göstermektedir. Standart perikardit tedavisi Covid-19 ilişkili perikardit için de güvenli ve etkilidir. Covid-19 hastalarında perikardiyal hastalıkların insidansını ve patofizyolojisini değerlendiren ileri çalışmalar, hastalık yükünün anlaşılmasına ve yeni tedavi stratejilerinin geliştirilmesine yardımcı olacaktır.

## KAYNAKLAR

- Report of the WHO-China Joint Mission on Coronavirus Disease 2019 (COVID-19). (2020). Accessed: June 20, 2022: <https://www.who.int/docs/default-source/coronavirus/who-china-joint-mission-on-covid-19-final-report.pdf>.
- Zhou P, Yang XL, Wang XG, et al. A pneumonia outbreak associated with a new coronavirus of probable bat origin. *Nature*. 2020;579:270–273. doi: 10.1038/s41586-020-1212-7
- Hoffmann M, Kleine-Weber H, Schroeder S, et al. SARS-CoV-2 cell entry depends on ACE2 and TMPRSS2 and is blocked by a clinically proven protease inhibitor. *Cell*. 2020;181:271–280.e8. doi: 10.1016/j.cell.2020.02.052
- Lan J, Ge J, Yu J, et al. Structure of the SARS-CoV-2 spike receptor binding domain bound to the ACE2 receptor. *Nature*. 2020;581:215–220. doi: 10.1038/s41586-020-2180-5
- Shang J, Ye G, Shi K, et al. Structural basis of receptor recognition by SARS-CoV-2. *Nature*. 2020;581:221–224. doi: 10.1038/s41586-020-2179-y
- Chen N, Zhou M, et al. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. *Lancet*. 2020;395(10223):507–13. [https://doi.org/10.1016/S0140-6736\(20\)30211-7](https://doi.org/10.1016/S0140-6736(20)30211-7).
- Wong, C.K.; Wong, J.Y.; Tang, et al. Clinical presentations, laboratory and radiological findings, and treatments for 11,028 COVID-19 patients: A systematic review and meta-analysis. *Sci. Rep.* 2020, 10, 19765.
- Fu L, Wang B, Yuan T, et al.: Clinical characteristics of coronavirus disease 2019 (COVID-19) in China: a systematic review and meta-analysis. *J Infect*. 2020, 80:656–65. 10.1016/j.jinf.2020.03.041
- Zheng YY, Ma YT, Zhang JY, Xie X: COVID-19 and the cardiovascular system . *Nat Rev Cardiol*. 2020, 17:259-60. 10.1038/s41569-020-0360-5
- Otaal PS, Batta A, Makkar K, Vijayvergia R: Cardiovascular conundrums of COVID-19 pandemic . *J Postgrad Med Educ Res*. 2020, 54:160-2. 10.5005/jp-journals-10028-1396



11. González-Calle D, Eiros R, Sánchez PL. The heart and SARS-CoV-2. *Med Clin (Engl Ed)*. 2022 Nov 11;159(9):440-446. doi: 10.1016/j.medcle.2022.10.001.
12. Maisch B, Seferovic PM, Ristic AD, Erbel R, Rienmuller R, Adler Y, Tomkowski WZ, Thiene G, Yacoub MH; Task Force on the Diagnosis and Management of Pericardial Diseases of the European Society of Cardiology. Guidelines on the diagnosis and management of pericardial diseases executive summary. *Eur Heart J* 2004;25:587-610.
13. Imazio M. Contemporary management of pericardial diseases. *Curr Opin Cardiol* 2012;27:308 – 317.
14. Imazio M, Gaita F. Diagnosis and treatment of pericarditis. *Heart* 2015;101: 1159 – 1168.
15. Lazarou E, Tsiofis P, Vlachopoulos C, et al. Acute Pericarditis: Update. *Curr Cardiol Rep*. 2022 Aug;24(8):905-913. doi: 10.1007/s11886-022-01710-8.
16. Holt JP. The normal pericardium. *Am J Cardiol*. 1970;26(5):455– 65. [https://doi.org/10.1016/0002-9149\(70\)90702-2](https://doi.org/10.1016/0002-9149(70)90702-2).
17. Cremer PC, Kumar A, Kontzias A, et al. Complicated pericarditis: understanding risk factors and pathophysiology to inform imaging and treatment. *J Am Coll Cardiol*. 2016;68:2311–28. <https://doi.org/10.1016/j.jacc.2016.07.785>.
18. Libby P, Lüscher T. COVID-19 is, in the end, an endothelial disease. *Eur Heart J*. 2020;41(32):3038–44. <https://doi.org/10.1093/eurheartj/ehaa623>
19. Furqan MM, Verma BR, Cremer PC, et al. Pericardial Diseases in COVID19: a Contemporary Review. *Curr Cardiol Rep*. 2021 Jun 3;23(7):90. doi: 10.1007/s11886-021-01519-x.
20. LeWinter MM. Clinical practice. Acute pericarditis. *N Engl J Med* 2014;371: 2410 – 2416.
21. Adler Y, Charron P, Imazio M, et al. 2015 ESC guidelines for the diagnosis and management of pericardial diseases: the Task Force for the Diagnosis and Management of Pericardial Diseases of the European Society of Cardiology. *Eur Heart J*. 2015;36:2921–64. <https://doi.org/10.1093/eurheartj/ehv318>.
22. Imazio M, Cecchi E, Demichelis B, et al. Myopericarditis versus viral or idiopathic acute pericarditis. *Heart*. 2008;94:498–501. <https://doi.org/10.1136/heart.2006.104067>.
23. Lazaros G, Klein AL, Hatziantoniou S, et al. The novel platform of mRNA COVID-19 vaccines and myocarditis: clues into the potential underlying mechanism. *Vaccine*. 2021;39:4925–7. <https://doi.org/10.1016/j.vaccine.2021.07.016>.
24. Buckley BJR, Harrison SL, Fazio-Eynullayeva E, et al. Prevalence and clinical outcomes of myocarditis and pericarditis in 718,365 COVID-19 patients. *Eur J Clin Invest*. 2021;51: e13679. <https://doi.org/10.1111/eci.13679>.
25. Patone M, Mei XW, Handunnetthi L, et al. Risks of myocarditis, pericarditis, and cardiac arrhythmias associated with COVID-19 vaccination or SARS-CoV-2 infection. *Nat Med*. 2021 Dec 14. <https://doi.org/10.1038/s41591-021-01630-0>.
26. Fairweather D, Beetler DJ, Di Florio DN, et al. COVID-19, Myocarditis and Pericarditis. *Circ Res*. 2023 May 12;132(10):1302-1319. doi: 10.1161/CIRCRESAHA.123.321878.
27. Purohit R, Kanwal A, Pandit A, et al. Acute myopericarditis with pericardial effusion and cardiac tamponade in a patient with COVID-19. *Am J Case Rep*. 2020;21:1–4. <https://doi.org/10.12659/AJCR.925554>.
28. Bao C, Liu X, Zhang H, Li Y, Liu J. Coronavirus disease 2019 (COVID-19) CT findings: a systematic review and meta-analysis. *J Am Coll Radiol*. 2020;17(6):701–9. <https://doi.org/10.1016/j.jacr.2020.03.006>.
29. Theetha Kariyanna P, Sabih A, Sutarjono B, et al. A Systematic Review of COVID-19 and Pericarditis. *Cureus*. 2022 Aug 12;14(8):e27948. doi: 10.7759/cureus.27948.
30. Imazio M. Noninfectious pericarditis: management challenges for cardiologists. *Kardiol Pol*. 2020;78:396–403. <https://doi.org/10.33963/KP.15353>.
31. Chetrit M, Xu B, Verma BR, Klein AL. Multimodality imaging for the assessment of pericardial diseases. *Curr Cardiol Rep*. 2019;21: 41. <https://doi.org/10.1007/s11886-019-1115-y>.



32. Brucato A, Imazio M, Gattorno M, et al. Effect of anakinra on recurrent pericarditis among patients with colchicine resistance and corticosteroid dependence. *JAMA*. 2016;316(18):1906. <https://doi.org/10.1001/jama.2016.15826> Randomized trial on the use of anakinra (Interleukin-1 receptor antagonist) in re- current and resistant pericarditis.
33. Klein A, Imazio M, Brucato A, et al. RHAPSODY: Rationale for and design of a pivotal phase 3 trial to assess efficacy and safety of rilonacept, an IL-1 $\alpha$  and IL-1 $\beta$  trap, in patients with re- current peri- carditis. *Am Heart J*. 2020;228:81–90. <https://doi.org/10.1016/j.ahj.2020.07.004>
34. Imazio M, Lazaros G, Picardi E, et al. Intravenous human immunoglobulins for refractory recur- rent pericarditis. *J Cardiovasc Med*. 2016;17(4):263–9. <https://doi.org/10.2459/JCM.0000000000000260>.
35. Vianello F, Cinetto F, Cavraro M, et al. Azathioprine in isolated recurrent pericarditis: a single centre experience. *Int J Cardiol*. 2011;147(3):477–8. <https://doi.org/10.1016/j.ijcard.2011.01.027>.
36. Day M. Covid-19: ibuprofen should not be used for managing symptoms, say doctors and scientists. *BMJ*. 2020;368:m1086. <https://doi.org/10.1136/bmj.m1086>.
37. Sodhi M, Etminan M. Safety of ibuprofen in patients with COVID- 19: causal or confounded? *Chest*. 2020;158:55–6. <https://doi.org/10.1016/j.chest.2020.03.040>.
38. Imazio M, Brucato A, Lazaros G, et al. Anti-inflammatory therapies for pericardial diseases in the COVID-19 pandemic: safety and potentiality. *J Cardiovasc Med (Hagerstown)*. 2020;21:625– 9. <https://doi.org/10.2459/JCM.0000000000001059>.
39. FDA advises patients on use of non-steroidal anti-inflammatory drugs (NSAIDs) for COVID-19 | FDA. Available at: <https://www.fda.gov/drugs/drug-safety-and-availability/fda-advises-patients-use-non-steroidal-anti-inflammatory-drugs-nsaids-covid-19>. Accessed October 26, 2020.
40. Lopes MI, Bonjorno LP, Giannini MC, et al. Beneficial effects of colchicine for moderate to se- vere COVID-19: an interim analysis of a randomized, double-blinded, placebo controlled clinical trial. *MedRxiv*. 2020;2020.08.06.20169573. <https://doi.org/10.1101/2020.08.06.20169573>
41. Dalili N, Dalili N, Kashefizadeh A, et al. Adding colchicine to the antiretroviral medicati- on-lopinavir/ritonavir (Kaletra) in hospital- ized patients with non-severe Covid-19 pneu- monia: a structured summary of a study protocol for a randomized controlled trial. *Trials*. 2020;21:489. <https://doi.org/10.1186/s13063-020-04455-3>.
42. Deftereos SG, Giannopoulos G, Vrachatis DA, et al. Effect of col- chicine vs standard care on cardiac and inflammatory biomarkers and clinical outcomes in patients hospitalized with coronavirus dis- ease 2019: the GRECCO-19 randomized clinical trial. *JAMA Netw Open*. 2020;3(6):e2013136. <https://doi.org/10.1001/jamanetworkopen.2020.13136>
43. Lamontagne F, Agoritsas T, MacDonald H, et al. A living WHO guideline on drugs for co- vid-19. *BMJ*. 2020;370:m3379. <https://doi.org/10.1136/bmj.m3379>.
44. Huet T, Beaussier H, Voisin O, et al. Anakinra for severe forms of COVID-19: a cohort study. *Lancet Rheumatol*. 2020;2(7):e393–400. [https://doi.org/10.1016/S2665-9913\(20\)30164-8](https://doi.org/10.1016/S2665-9913(20)30164-8).
45. E.Ceccucci,F.Piramide,A.Pecoraro, et al.,The vaccine journey for COVID-19: a comprehen- sive systematic review of current clinical trials in humans.
46. A.M.Hause, J.Gee, J.Baggs, et al.,COVID- 19 vaccine safety in adolescents aged 12-17 Years - United States, December 14, 2020-July 16, 2021, *MMWR Morb. Mortal. Wkly. Rep.* 70 (31) (2021 Aug) 1053–1058.
47. Diaz GA, Parsons GT, Gering SK, et al. Myocarditis and pericarditis after vaccination for COVID-19. *JAMA*. 2021;326:1210–2. <https://doi.org/10.1001/jama.2021.13443>.
48. Fatima M, Ahmad Cheema H, Ahmed Khan MH, et al. Development of myocarditis and pericarditis after COVID-19 vaccination in adult population: A systematic review. *Ann Med Surg (Lond)*. 2022 Apr;76:103486. doi: 10.1016/j.amsu.2022.103486.w