



1. Bölüm

COVID-19 ve Akciğerler

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Çin'in Hubei eyaleti, Vuhan şehrinde ilk kez 31 Aralık 2019 da etiyolojisi bilinmeyen atipik pnömoni vakalarının bildirilmesinden çok kısa bir süre sonra tüm dünya küresel bir salgının etkisi altına girdi. Yaklaşık 1 yıllık süre zarfında, 154 milyon insan enfekte oldu, 3 milyon insan da bu enfeksiyona bağlı olarak hayatını kaybetti. Henüz yerküredeki hiçbir ülkede pandemi öncesi yaşama dönülemedi ve virüsün yaşamın pek çok alanındaki etkilerinin daha uzunca süre hissedilmesi beklenmektedir. Bu makalede, önce virus hakkındaki genel bilgiler verilecek ardından virüsün akciğerler üzerindeki etkilerine dair 15-16 ay gibi kısa sürede elde edilmiş bilgiler paylaşılacaktır.

SARS-CoV-2 HAKKINDA GENEL BİLGİLER

Salgının nedeni, ilk kez 7 ocak 2020 de tanımlanabilmiş ve etkenin yeni bir tip coronavirus olduğu bildirilmiştir. Bu yeni virüse, başlangıçta 2019- novel coronavirus (2019-nCoV), neden olduğu hastalığa da COVID-19 (COronaVirus Disease-19) adı verilmiştir. Daha sonra yapılan gen dizi analiz sonuçlarına göre bu yeni virüsün SARS-CoV'a çok benzediği tespit edilmiş ve virüsün adı SARS-CoV-2 olarak değiştirilmiştir.

İnsanoğlu enfeksiyon etkeni olarak coronavirus ailesinden pek çok virus ile daha önce tanışmıştır.İnsanlarda mevsimsel soğuk algınlığına yol açan HCoV-229E, HCoV-NL63, HCoV-OC43, HKU1-CoV ile ağır akut solunum yetmezliğine yol açan MERS-CoV ve SARS-CoV daha önce tanımlanmış coronavirus enfeksiyon etkenleridir. Bunlara 2019 yılı sonu itibariyle SARS-CoV-2 eklenmiştir.

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ın, IL-6 seviyesini ve salınımını azaltarak lenfosit artışı ve sitokin fırtınasında hafiflemeye yol açtığı düşünülmektedir. Eğer farmakolojik tedavi kontrendike ise, mekanik VTE profilaksisi (aralıklı pnömatik kompresyon) uygulanabilir.

Ayaktan hastada PTE profilaksisi; karantinada tutulan hafif COVID hastalarına hareket önerilmelidir. Altta komorbiditesi olan veya immobil hastalarda profilaksi verilebilir. Hareketsiz olan, daha önce VTE geçirmiş olan, aktif kanseri olanlarda net olmasa da genellikle profilaksi önerilmektedir.

Taburculuk sonrası DMAH ya da yeni oral antikoagülan ilaçlar ile profilaksiye devam etmek VTE açısından koruyucudur ancak beraberinde bir miktar kanama riskini de getirir. Özellikle azalmış mobilitesi olan, aktif kanseri olan, D-dimer üst sınırın 2 katından fazla olan ve artmış kanama riski olmayan hastalarda 45 güne kadar uzamış profilaksi verilebilir.

KAYNAKLAR

1. Lu R, Zhao X, Li J, et al. Genomic characterisation and epidemiology of 2019 novel coronavirus: implications for virus origins and receptor binding. *The lancet*. 2020;395(10224):565-574.
2. Meyerowitz EA, Richterman A, Gandhi RT, et al. Transmission of SARS-CoV-2: a review of viral, host, and environmental factors. *Annals of internal medicine*. 2020.
3. Morawska L, Milton DK. It is time to address airborne transmission of coronavirus disease 2019 (COVID-19). *Clinical Infectious Diseases*. 2020;71(9):2311-2313.
4. Organization WH. Transmission of SARS-CoV-2: implications for infection prevention precautions: scientific brief, 09 July 2020. World Health Organization; 2020.
5. Klompas M, Baker MA, Rhee C. Airborne transmission of SARS-CoV-2: theoretical considerations and available evidence. *Jama*. 2020.
6. Chagla Z, Hota S, Khan S, et al. Airborne Transmission of COVID-19. *Clinical Infectious Diseases: An Official Publication of the Infectious Diseases Society of America*. 2020.
7. Kampf G, Todt D, Pfaender S, et al. Persistence of coronaviruses on inanimate surfaces and their inactivation with biocidal agents. *Journal of hospital infection*. 2020;104(3):246-251.
8. Nishiura H, Kobayashi T, Miyama T, et al. Estimation of the asymptomatic ratio of novel coronavirus infections (COVID-19). *International journal of infectious diseases*. 2020;94:154.
9. Mizumoto K, Kagaya K, Zarebski A, et al. Estimating the asymptomatic proportion of coronavirus disease 2019 (COVID-19) cases on board the Diamond Princess cruise ship, Yokohama, Japan, 2020. *Eurosurveillance*. 2020;25(10):2000180.
10. Yuki K, Fujiogi M, Koutsogiannaki S. COVID-19 pathophysiology: A review. *Clinical immunology*. 2020;108427.
11. Silverman RH. COVID-19: Coronavirus replication, pathogenesis, and therapeutic strategies. *Cleveland Clinic journal of medicine*. 2020;87(6):321.
12. Blanco-Melo D, Nilsson-Payant B, Liu W-C, et al. SARS-CoV-2 launches a unique transcriptional signature from in vitro, ex vivo, and in vivo systems. *BioRxiv*. 2020.
13. Xiao AT, Gao C, Zhang S. Profile of specific antibodies to SARS-CoV-2: the first report. *Journal of Infection*. 2020;81(1):147-178.
14. Sagnelli C, Celia B, Monari C, et al. Management of SARS-CoV-2 pneumonia. *Journal of medical virology*. 2021;93(3):1276-1287.

15. Tian S, Xiong Y, Liu H, et al. Pathological study of the 2019 novel coronavirus disease (COVID-19) through postmortem core biopsies. *Modern Pathology*. 2020;33(6):1007-1014.
16. McGonagle D, O'Donnell JS, Sharif K, et al. Immune mechanisms of pulmonary intravascular coagulopathy in COVID-19 pneumonia. *The Lancet Rheumatology*. 2020.
17. Boccia M, Aronne L, Celia B, et al. COVID-19 and coagulative axis: review of emerging aspects in a novel disease. *Monaldi Archives for Chest Disease*. 2020;90(2).
18. Chan JF-W, Yuan S, Kok K-H, et al. A familial cluster of pneumonia associated with the 2019 novel coronavirus indicating person-to-person transmission: a study of a family cluster. *The lancet*. 2020;395(10223):514-523.
19. Li Q, Guan X, Wu P, et al. Early transmission dynamics in Wuhan, China, of novel coronavirus-infected pneumonia. *New England journal of medicine*. 2020.
20. Guan W-j, Ni Z-y, Hu Y, et al. Clinical characteristics of coronavirus disease 2019 in China. *New England journal of medicine*. 2020;382(18):1708-1720.
21. Lauer SA, Grantz KH, Bi Q, et al. The incubation period of coronavirus disease 2019 (COVID-19) from publicly reported confirmed cases: estimation and application. *Annals of internal medicine*. 2020;172(9):577-582.
22. Qin J, You C, Lin Q, et al. Estimation of incubation period distribution of COVID-19 using disease onset forward time: a novel cross-sectional and forward follow-up study. *Science advances*. 2020;6(33):eabc1202.
23. Struyf T, Deeks JJ, Dinnes J, et al. Signs and symptoms to determine if a patient presenting in primary care or hospital outpatient settings has COVID-19 disease. *Cochrane Database of Systematic Reviews*. 2020(7).
24. Wang D, Hu B, Hu C, et al. Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus-infected pneumonia in Wuhan, China. *Jama*. 2020;323(11):1061-1069.
25. Goyal P, Choi JJ, Pinheiro LC, et al. Clinical characteristics of COVID-19 in New York city. *New England Journal of Medicine*. 2020;382(24):2372-2374.
26. Huang C, Wang Y, Li X, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *The lancet*. 2020;395(10223):497-506.
27. Chen N, Zhou M, Dong X, et al. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. *The lancet*. 2020;395(10223):507-513.
28. Weitz JI, Fredenburgh JC, Eikelboom JW. A Test in Context: D-Dimer. *J Am Coll Cardiol*. 2017;70(19):2411-2420.
29. Tang N, Li D, Wang X, et al. Abnormal coagulation parameters are associated with poor prognosis in patients with novel coronavirus pneumonia. *J Thromb Haemost*. 2020;18(4):844-847.
30. Zhou F, Yu T, Du R, et al. Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. *The lancet*. 2020;395(10229):1054-1062.
31. Lippi G, Plebani M. Procalcitonin in patients with severe coronavirus disease 2019 (COVID-19): A meta-analysis. *Clin Chim Acta*. 2020;505:190-191.
32. Kotula JJ, 3rd, Moore WS, 2nd, Chopra A, et al. Association of Procalcitonin Value and Bacterial Coinfections in Pediatric Patients With Viral Lower Respiratory Tract Infections Admitted to the Pediatric Intensive Care Unit. *J Pediatr Pharmacol Ther*. 2018;23(6):466-472.
33. Wong HYF, Lam HYS, Fong AH, et al. Frequency and Distribution of Chest Radiographic Findings in Patients Positive for COVID-19. *Radiology*. 2020;296(2):E72-e78.
34. Martinelli AW, Ingle T, Newman J, et al. COVID-19 and pneumothorax: a multicentre retrospective case series. *Eur Respir J*. 2020;56(5).
35. Miró Ò, Llorens P, Jiménez S, et al. Frequency, Risk Factors, Clinical Characteristics, and Outcomes of Spontaneous Pneumothorax in Patients With Coronavirus Disease 2019: A Case-Control, Emergency Medicine-Based Multicenter Study. *Chest*. 2021;159(3):1241-1255.

36. Simpson S, Kay FU, Abbata S, et al. Radiological society of north America expert consensus document on reporting chest CT findings related to COVID-19: endorsed by the society of thoracic Radiology, the American college of Radiology, and RSNA. *Radiology: Cardiothoracic Imaging*. 2020;2(2):e200152.
37. Radiology ACo. Recommendations for the use of chest radiography and computed tomography (CT) for suspected COVID-19 infection. 2020. Available in: [\[https://www.acr.org/Advocacy-and-Economics/ACR-Position-Statements/Recommendations-for-Chest-Radiography-and-CT-for-Suspected-COVID19-Infection\]](https://www.acr.org/Advocacy-and-Economics/ACR-Position-Statements/Recommendations-for-Chest-Radiography-and-CT-for-Suspected-COVID19-Infection) Access in. 2020;14.
38. Han X, Cao Y, Jiang N, et al. Novel Coronavirus Disease 2019 (COVID-19) Pneumonia Progression Course in 17 Discharged Patients: Comparison of Clinical and Thin-Section Computed Tomography Features During Recovery. *Clin Infect Dis*. 2020;71(15):723-731.
39. Abrams ER, Rose G, Fields JM, et al. Point-of-Care Ultrasound in the Evaluation of COVID-19. *J Emerg Med*. 2020;59(3):403-408.
40. Peng QY, Wang XT, Zhang LN. Findings of lung ultrasonography of novel corona virus pneumonia during the 2019-2020 epidemic. *Intensive Care Med*. 2020;46(5):849-850.
41. Bar S, Lecourtois A, Diouf M, et al. The association of lung ultrasound images with COVID-19 infection in an emergency room cohort. *Anaesthesia*. 2020;75(12):1620-1625.
42. Böger B, Fachi MM, Vilhena RO, et al. Systematic review with meta-analysis of the accuracy of diagnostic tests for COVID-19. *American journal of infection control*. 2020.
43. Jiang Y, Chen D, Cai D, et al. Effectiveness of remdesivir for the treatment of hospitalized COVID-19 persons: A network meta-analysis. *J Med Virol*. 2021;93(2):1171-1174.
44. Beigel JH, Tomashek KM, Dodd LE, et al. Remdesivir for the Treatment of COVID-19 - Final Report. *N Engl J Med*. 2020;383(19):1813-1826.
45. Al-Abdoun A, Bizanti A, Barbarawi M, et al. Remdesivir for the treatment of COVID-19: a systematic review and meta-analysis of randomized controlled trials. *Contemporary clinical trials*. 2021;106272.
46. Solaymani-Dodaran M, Ghanei M, Bagheri M, et al. Safety and efficacy of Favipiravir in moderate to severe SARS-CoV-2 pneumonia. *Int Immunopharmacol*. 2021;95:107522.
47. Ivashchenko AA, Dmitriev KA, Vostokova NV, et al. AVIFAVIR for Treatment of Patients with Moderate COVID-19: Interim Results of a Phase II/III Multicenter Randomized Clinical Trial. *Clin Infect Dis*. 2020.
48. Shrestha DB, Budhathoki P, Khadka S, et al. Favipiravir versus other antiviral or standard of care for COVID-19 treatment: a rapid systematic review and meta-analysis. *Virology journal*. 2020;17(1):1-15.
49. Fiolet T, Guihur A, Rebeaud ME, et al. Effect of hydroxychloroquine with or without azithromycin on the mortality of coronavirus disease 2019 (COVID-19) patients: a systematic review and meta-analysis. *Clinical microbiology and infection*. 2021;27(1):19-27.
50. Bhattacharyya A, Kumar S, Sarma P, et al. Safety and efficacy of lopinavir/ritonavir combination in COVID-19: A systematic review, meta-analysis, and meta-regression analysis. *Indian J Pharmacol*. 2020;52(4):313-323.
51. Cao B, Wang Y, Wen D, et al. A Trial of Lopinavir-Ritonavir in Adults Hospitalized with Severe COVID-19. *N Engl J Med*. 2020;382(19):1787-1799.
52. Verdugo-Paiva F, Izcovich A, Ragusa M, et al. Lopinavir-ritonavir for COVID-19: A living systematic review. *Medwave*. 2020;20(6):e7967.
53. Simonovich VA, Burgos Pratz LD, Scibona P, et al. A Randomized Trial of Convalescent Plasma in COVID-19 Severe Pneumonia. *N Engl J Med*. 2021;384(7):619-629.
54. Sarkar S, Soni KD, Khanna P. Convalescent plasma is a clutch at straws in COVID-19 management! A systematic review and metaanalysis. *Journal of medical virology*. 2021;93(2):1111-1118.
55. Libster R, Pérez Marc G, Wappner D, et al. Early High-Titer Plasma Therapy to Prevent Severe COVID-19 in Older Adults. *N Engl J Med*. 2021;384(7):610-618.

56. Horby P, Lim WS, Emberson JR, et al. Dexamethasone in Hospitalized Patients with COVID-19. *N Engl J Med*. 2021;384(8):693-704.
57. Pasin L, Navalesi P, Zangrillo A, et al. Corticosteroids for Patients With Coronavirus Disease 2019 (COVID-19) With Different Disease Severity: A Meta-Analysis of Randomized Clinical Trials. *Journal of cardiothoracic and vascular anesthesia*. 2021;35(2):578-584.
58. Xu X, Han M, Li T, et al. Effective treatment of severe COVID-19 patients with tocilizumab. *Proc Natl Acad Sci U S A*. 2020;117(20):10970-10975.
59. Gritti G, Raimondi F, Ripamonti D, et al. IL-6 signalling pathway inactivation with siltuximab in patients with COVID-19 respiratory failure: an observational cohort study. *medRxiv*. 2020.
60. Salama C, Han J, Yau L, et al. Tocilizumab in Patients Hospitalized with COVID-19 Pneumonia. *N Engl J Med*. 2021;384(1):20-30.
61. Gordon AC, Mouncey PR, Al-Beidh F, et al. Interleukin-6 Receptor Antagonists in Critically Ill Patients with COVID-19. *N Engl J Med*. 2021;384(16):1491-1502.
62. Tleyjeh IM, Kashour Z, Damlaj M, et al. Efficacy and safety of tocilizumab in COVID-19 patients: a living systematic review and meta-analysis. *Clinical Microbiology and Infection*. 2020.
63. Tharaux P-L, Pialoux G, Pavot A, et al. Effect of anakinra versus usual care in adults in hospital with COVID-19 and mild-to-moderate pneumonia (CORIMUNO-ANA-1): a randomised controlled trial. *The Lancet Respiratory Medicine*. 2021;9(3):295-304.
64. Bozzi G, Mangioni D, Minoia F, et al. Anakinra combined with methylprednisolone in patients with severe COVID-19 pneumonia and hyperinflammation: an observational cohort study. *Journal of Allergy and Clinical Immunology*. 2021;147(2):561-566. e564.
65. Balkhair A, Al-Zakwani I, Al Busaidi M, et al. Anakinra in hospitalized patients with severe COVID-19 pneumonia requiring oxygen therapy: results of a prospective, open-label, interventional study. *International Journal of Infectious Diseases*. 2021;103:288-296.
66. Pasin L, Cavalli G, Navalesi P, et al. Anakinra for patients with COVID-19: a meta-analysis of non-randomized cohort studies. *European journal of internal medicine*. 2021;86:34-40.
67. Kalil AC, Patterson TF, Mehta AK, et al. Baricitinib plus remdesivir for hospitalized adults with COVID-19. *New England Journal of Medicine*. 2021;384(9):795-807.
68. Li J, Huang DQ, Zou B, et al. Epidemiology of COVID-19: A systematic review and meta-analysis of clinical characteristics, risk factors, and outcomes. *Journal of medical virology*. 2021;93(3):1449-1458.
69. Lim ZJ, Subramaniam A, Reddy MP, et al. Case fatality rates for patients with COVID-19 requiring invasive mechanical ventilation. A meta-analysis. *American journal of respiratory and critical care medicine*. 2021;203(1):54.
70. Lim ZJ, Subramaniam A, Ponnappa Reddy M, et al. Case Fatality Rates for Patients with COVID-19 Requiring Invasive Mechanical Ventilation. A Meta-analysis. *Am J Respir Crit Care Med*. 2021;203(1):54-66.
71. Bae S, Kim SR, Kim M-N, et al. Impact of cardiovascular disease and risk factors on fatal outcomes in patients with COVID-19 according to age: a systematic review and meta-analysis. *Heart*. 2021;107(5):373-380.
72. Cortinovis M, Perico N, Remuzzi G. Long-term follow-up of recovered patients with COVID-19. *The Lancet*. 2021;397(10270):173-175.
73. Yang J, Hu J, Zhu C. Obesity aggravates COVID-19: a systematic review and meta-analysis. *Journal of medical virology*. 2021;93(1):257-261.
74. Yang J, Tian C, Chen Y, et al. Obesity aggravates COVID-19: an updated systematic review and meta-analysis. *Journal of medical virology*. 2021;93(5):2662-2674.
75. Munshi R, Hussein MH, Toraih EA, et al. Vitamin D insufficiency as a potential culprit in critical COVID-19 patients. *J Med Virol*. 2021;93(2):733-740.

76. Oscanoa TJ, Amado J, Vidal X, et al. The relationship between the severity and mortality of SARS-CoV-2 infection and 25-hydroxyvitamin D concentration—a metaanalysis. *Advances in respiratory medicine*. 2021;89(2):145-157.
77. Huang C, Huang L, Wang Y, et al. 6-month consequences of COVID-19 in patients discharged from hospital: a cohort study. *The Lancet*. 2021.
78. Sekhavati E, Jafari F, SeyedAlinaghi S, et al. Safety and effectiveness of azithromycin in patients with COVID-19: An open-label randomised trial. *International journal of antimicrobial agents*. 2020;56(4):106143.
79. Ravioli S, Ochsner H, Lindner G. Reactivation of COVID-19 pneumonia: a report of two cases. *The Journal of infection*. 2020.
80. Asadollahi-Amin A, Hasibi M, Ghadimi F, et al. Lung involvement found on chest ct scan in a pre-symptomatic person with SARS-CoV-2 infection: a case report. *Tropical medicine and infectious disease*. 2020;5(2):56.
81. Mehraeen E, Hayati B, Saeidi S, et al. Self-care instructions for people not requiring hospitalization for coronavirus disease 2019 (COVID-19). *Archives of Clinical Infectious Diseases*. 2020;15(COVID-19).
82. Shah VK, Fimal P, Alam A, et al. Overview of immune response during SARS-CoV-2 infection: lessons from the past. *Frontiers in immunology*. 2020;11:1949.
83. Arafkas M, Khosrawipour T, Kocbach P, et al. Current meta-analysis does not support the possibility of COVID-19 reinfections. *Journal of medical virology*. 2021;93(3):1599-1604.
84. Tang N, Li D, Wang X, et al. Abnormal coagulation parameters are associated with poor prognosis in patients with novel coronavirus pneumonia. *Journal of thrombosis and haemostasis*. 2020;18(4):844-847.
85. Huang C, Wang Y, Li X, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet*. 2020;395(10223):497-506.
86. Léonard-Lorant I, Delabranche X, Séverac F, et al. Acute Pulmonary Embolism in Patients with COVID-19 at CT Angiography and Relationship to d-Dimer Levels. *Radiology*. 2020;296(3):E189-e191.