



KRONİK OBSTRÜKTİF AKCİĞER HASTALIĞINDA ACİL YAKLAŞIM

Merve GÜLERYÜZ CAN¹

Kronik obstrüktif akciğer hastalığı (KOAH), genellikle zararlı partikül veya gazlara ciddi maruziyetin neden olduğu havayolu ve/veya alveoler anormalliklere bağlı kalıcı hava akımı kısıtlanması ve solunumsal semptomlarla karakterize, yaygın, önlenebilir ve tedavi edilebilir bir hastaliktır (1).

KOAH önemli mortalite ve morbidite nedeni olup her geçen gün hızla artmakta ve ciddi bir iş görmezlik ve ekonomik yük'e yol açmaktadır. Dünya Sağlık Örgütü'ne (DSÖ) göre 2012 yılında dünyada 3 milyondan fazla kişi KOAH nedeniyle yaşamını kaybetmiştir ve bu sayı global olarak kayıpların %6'sını oluşturmaktadır (1).

En yaygın solunumsal semptomlar öksürük, balgam ve nefes darlığıdır (2). KOAH için risk faktörleri temelde tütün ürünleri, biomass maruziyeti, hava kirliliği ve genetik anormallikler olarak sayılabilir. Eşlik eden kronik hastalıklar morbidite ve mortaliteyi artıran önemli nedenlerdir. Bu nedenle KOAH'ta sıklıkla görülen ve hastaneye yatiş oranlarını etkileyen kardiyovasküler hastalıklar, metabolik sendrom, osteoporoz, akciğer kanseri, obstrüktif uyku apne sendromu, depresyon, anksiyete gibi kronik hastalıklar kontrol altında tutulmalıdır.

Hastanın yaşam kalitesinde iyileşme, akciğer fonksiyonlarının korunması ve gelecek riskleri önlemek açısından stabil dönem KOAH tedavisi seçimi ve tedavi uyumu çok önemlidir (3). Stabil dönem tedavisine karar verirken GOLD kılavuzu ışığında hastanın kategorizasyonu yapılır (Şekil 1), grubuna göre ilgili tedavi seçilir. Bu tedavi seçimi sırasında KOAH fenotipleri göz önünde bulundurulmalıdır.

¹ Uzm. Dr. Merve GÜLERYÜZ CAN, Menteşe Devlet Hastanesi, Göğüs Hastalıkları Bölümü
merve.guleryuz.can@gmail.com

KAYNAKLAR

1. Global Strategy for the Diagnosis, Management and Prevention of COPD, Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2021. Available from: <http://goldcopd.org>.
2. Anthonisen NR, Manfreda J, Warren CP, et al. Antibiotic therapy in exacerbations of chronic obstructive pulmonary disease. *Ann Intern Med.* 1987 Feb;106(2):196-204. doi: 10.7326/0003-4819-106-2-196. PMID: 3492164.
3. Wilkinson TM, Donaldson GC, Hurst JR, et al. Early therapy improves outcomes of exacerbations of chronic obstructive pulmonary disease. *Am J Respir Crit Care Med.* 2004 Jun 15;169(12):1298-303. doi: 10.1164/rccm.200310-1443OC. Epub 2004 Feb 27. PMID: 14990395.
4. Lung Biology in Health and Disease Volume 228 Executive Editor: Claude Lenfant Chronic Obstructive Pulmonary Disease Exacerbations Page 23.
5. Woodhead M, Blasi F, Ewig S, et al. European Society of Clinical Microbiology and Infectious Diseases. Guidelines for the management of adult lower respiratory tract infections. *Eur Respir J.* 2005 Dec;26(6):1138-80. doi: 10.1183/09031936.05.00055705. Erratum in: *Eur Respir J.* 2006 Feb;27(2):439. Leven, M [corrected to Ieven, M]. PMID: 16319346.
6. Li MH, Fan LC, Mao B, et al. Short-term Exposure to Ambient Fine Particulate Matter Increases Hospitalizations and Mortality in COPD: A Systematic Review and Meta-analysis. *Chest.* 2016 Feb;149(2):447-458. doi: 10.1378/chest.15-0513. Epub 2016 Jan 12. PMID: 26111257.
7. White AJ, Gompertz S, Stockley RA. Chronic obstructive pulmonary disease . 6: The aetiology of exacerbations of chronic obstructive pulmonary disease. *Thorax.* 2003 Jan;58(1):73-80. doi: 10.1136/thorax.58.1.73. PMID: 12511727; PMCID: PMC1746462.
8. Papi A, Bellettato CM, Braccioni F, et al. Infections and airway inflammation in chronic obstructive pulmonary disease severe exacerbations. *Am J Respir Crit Care Med.* 2006 May 15;173(10):1114-21. doi: 10.1164/rccm.200506-859OC. Epub 2006 Feb 16. PMID: 16484677.
9. Bafadhel M, McKenna S, Terry S, et al. Acute exacerbations of chronic obstructive pulmonary disease: identification of biologic clusters and their biomarkers. *Am J Respir Crit Care Med.* 2011 Sep 15;184(6):662-71. doi: 10.1164/rccm.201104-0597OC. PMID: 21680942.
10. Groenke L, Disse B. Blood eosinophil counts as markers of response to inhaled corticosteroids in COPD? *Lancet Respir Med.* 2015 Aug;3(8):e26. doi: 10.1016/S2213-2600(15)00258-1. PMID: 26282478.
11. Bafadhel M, McKenna S, Terry S, et al. Blood eosinophils to direct corticosteroid treatment of exacerbations of chronic obstructive pulmonary disease: a randomized placebo-controlled trial. *Am J Respir Crit Care Med.* 2012 Jul 1;186(1):48-55. doi: 10.1164/rccm.201108-1553OC. Epub 2012 Mar 23. PMID: 22447964; PMCID: PMC3400995.
12. Seemungal TA, Donaldson GC, Bhowmik A, et al. Time course and recovery of exacerbations in patients with chronic obstructive pulmonary disease. *Am J Respir Crit Care Med.* 2000 May;161(5):1608-13. doi: 10.1164/ajrccm.161.5.9908022. PMID: 10806163.
13. Halpin DMG, Birk R, Brealey N, et al. Single-inhaler triple therapy in symptomatic

- COPD patients: FULFIL subgroup analyses. *ERJ Open Res.* 2018 May;4(2):00119-2017. doi: 10.1183/23120541.00119-2017. PMID: 29750142; PMCID: PMC5934530.
- 14. Donaldson GC, Law M, Kowlessar B, et al. Impact of Prolonged Exacerbation Recovery in Chronic Obstructive Pulmonary Disease. *Am J Respir Crit Care Med.* 2015 Oct;192(8):943-50. doi: 10.1164/rccm.201412-2269OC. PMID: 26151174; PMCID: PMC4642208.
 - 15. Dickens JA, Miller BE, Edwards LD, et al. Evaluation of COPD Longitudinally to Identify Surrogate Endpoints (ECLIPSE) study investigators. COPD association and repeatability of blood biomarkers in the ECLIPSE cohort. *Respir Res.* 2011 Nov;12(1):146. doi: 10.1186/1465-9921-12-146. PMID: 22054035; PMCID: PMC3247194.
 - 16. Miravitles M, Soler-Cataluña JJ, Calle M, et al. Spanish Guidelines for Management of Chronic Obstructive Pulmonary Disease (GesEPOC) 2017. Pharmacological Treatment of Stable Phase. *Arch Bronconeumol.* 2017 Jun;53(6):324-335. English, Spanish. doi: 10.1016/j.arbres.2017.03.018. Epub 2017 May 3. PMID: 28477954.
 - 17. Suissa S, Dell'Aniello S, Ernst P. Long-term natural history of chronic obstructive pulmonary disease: severe exacerbations and mortality. *Thorax.* 2012 Nov;67(11):957-63. doi: 10.1136/thoraxjnl-2011-201518. Epub 2012 Jun 8. PMID: 22684094; PMCID: PMC3505864.
 - 18. Han MK, Kazerooni EA, Lynch DA, et al. COPDGene Investigators. Chronic obstructive pulmonary disease exacerbations in the COPDGene study: associated radiologic phenotypes. *Radiology.* 2011 Oct;261(1):274-82. doi: 10.1148/radiol.11110173. Epub 2011 Jul 25. PMID: 21788524; PMCID: PMC3184233.
 - 19. Hurst JR, Vestbo J, Anzueto A, et al. Evaluation of COPD Longitudinally to Identify Predictive Surrogate Endpoints (ECLIPSE) Investigators. Susceptibility to exacerbation in chronic obstructive pulmonary disease. *N Engl J Med.* 2010 Sep 16;363(12):1128-38. doi: 10.1056/NEJMoa0909883. PMID: 20843247.
 - 20. Barnes N, Calverley PM, Kaplan A, et al. Chronic obstructive pulmonary disease and exacerbations: patient insights from the global Hidden Depths of COPD survey. *BMC Pulm Med.* 2013 Aug 23;13:54. doi: 10.1186/1471-2466-13-54. PMID: 23971625; PMCID: PMC3765923.
 - 21. García-Polo C, Alcázar-Navarrete B, Ruiz-Iturriaga LA, et al. InEPOC Group. Factors associated with high healthcare resource utilisation among COPD patients. *Respir Med.* 2012 Dec;106(12):1734-42. doi: 10.1016/j.rmed.2012.09.009. Epub 2012 Oct 9. PMID: 23058483.
 - 22. Alcázar B, García-Polo C, Herrejón A, et al. Factors associated with hospital admission for exacerbation of chronic obstructive pulmonary disease. *Arch Bronconeumol.* 2012 Mar;48(3):70-6. English, Spanish. doi: 10.1016/j.arbres.2011.10.009. Epub 2011 Dec 21. PMID: 22196478.
 - 23. Kessler R, Faller M, Fourgaut G, et al. Predictive factors of hospitalization for acute exacerbation in a series of 64 patients with chronic obstructive pulmonary disease. *Am J Respir Crit Care Med.* 1999 Jan;159(1):158-64. doi: 10.1164/ajrccm.159.1.9803117. PMID: 9872834.
 - 24. Gadoury MA, Schwartzman K, Rouleau M, et al. Chronic Obstructive Pulmonary Disease axis of the Respiratory Health Network, Fonds de la recherche en santé du Québec (FRSQ). Self-management reduces both short- and long-term hospitalisation in COPD. *Eur Respir J.* 2005 Nov;26(5):853-7. doi: 10.1183/09031936.05.00093204. PMID: 16264046.

25. Niewoehner DE, Lokhnygina Y, Rice K, et al. Risk indexes for exacerbations and hospitalizations due to COPD. *Chest*. 2007 Jan;131(1):20-8. doi: 10.1378/chest.06-1316. PMID: 17218552.
26. Cao Z, Ong KC, Eng P, et al. Frequent hospital readmissions for acute exacerbation of COPD and their associated factors. *Respirology*. 2006 Mar;11(2):188-95. doi: 10.1111/j.1440-1843.2006.00819.x. PMID: 16548905.
27. Pouw EM, Ten Velde GP, Croonen BH, et al. Early non-elective readmission for chronic obstructive pulmonary disease is associated with weight loss. *Clin Nutr*. 2000 Apr;19(2):95-9. doi: 10.1054/clnu.1999.0074. PMID: 10867726.
28. Miravitles M, Guerrero T, Mayordomo C, et al. Factors associated with increased risk of exacerbation and hospital admission in a cohort of ambulatory COPD patients: a multiple logistic regression analysis. The EOLO Study Group. *Respiration*. 2000;67(5):495-501. doi: 10.1159/000067462. PMID: 11070451.
29. Global Strategy for the Diagnosis, Management and Prevention of COPD, Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2017. Available from: <http://goldcopd.org>.
30. Ali NK. Evidence-Based Approach to Acute Exacerbations of Chronic Obstructive Pulmonary Disease. *Hospital Physician*. 2009;38:9-16.
31. Global Strategy for the Diagnosis, Management and Prevention of COPD, Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2009. Available from: <http://goldcopd.org>.
32. Parker CM, Voduc N, Aaron SD, et al. Physiological changes during symptom recovery from moderate exacerbations of COPD. *Eur Respir J*. 2005 Sep;26(3):420-8. doi: 10.1183/09031936.05.00136304. PMID: 16135722.
33. Global Strategy for the Diagnosis, Management and Prevention of COPD, Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2015. Available from: <http://goldcopd.org>.
34. Celli BR, Barnes PJ. Exacerbations of chronic obstructive pulmonary disease. *Eur Respir J*. 2007 Jun;29(6):1224-38. doi: 10.1183/09031936.00109906. Erratum in: *Eur Respir J*. 2007 Aug;30(2):401. PMID: 17540785.
35. Celli BR, MacNee W; ATS/ERS Task Force. Standards for the diagnosis and treatment of patients with COPD: a summary of the ATS/ERS position paper. *Eur Respir J*. 2004 Jun;23(6):932-46. doi: 10.1183/09031936.04.00014304. Erratum in: *Eur Respir J*. 2006 Jan;27(1):242. PMID: 15219010.
36. Baha, A. (2020) KOAH Alevlenmeye Tanı ve Tedavi Yaklaşımı. Can Sevinç, Oğuz Uzun (Ed), Solunum Acilleri içinde (S.288-306).
37. Vijayasaratha K, Stockley RA. Reported and unreported exacerbations of COPD: analysis by diary cards. *Chest*. 2008 Jan;133(1):34-41. doi: 10.1378/chest.07-1692. Epub 2007 Nov 7. PMID: 17989153.
38. Bardsley G, Pilcher J, McKinstry S, et al. Oxygen versus air-driven nebulisers for exacerbations of chronic obstructive pulmonary disease: a randomised controlled trial. *BMC Pulm Med*. 2018 Oct 3;18(1):157. doi: 10.1186/s12890-018-0720-7. PMID: 30285695; PMCID: PMC6171193.
39. van Geffen WH, Douma WR, Slebos DJ, et al. Bronchodilators delivered by nebuliser versus pMDI with spacer or DPI for exacerbations of COPD. *Cochrane Database Syst Rev*. 2016 Aug 29;(8):CD011826. doi: 10.1002/14651858.CD011826.pub2. PMID: 27569680.
40. van Eerd EA, van der Meer RM, van Schayck OC, et al. Smoking cessation for people

- with chronic obstructive pulmonary disease. *Cochrane Database Syst Rev.* 2016 Aug 20;2016(8):CD010744. doi: 10.1002/14651858.CD010744.pub2. PMID: 27545342; PMCID: PMC6400424.
- 41. Devereux G, Cotton S, Fielding S, et al. Effect of Theophylline as Adjunct to Inhaled Corticosteroids on Exacerbations in Patients With COPD: A Randomized Clinical Trial. *JAMA.* 2018 Oct 16;320(15):1548-1559. doi: 10.1001/jama.2018.14432. PMID: 30326124; PMCID: PMC6233797.
 - 42. Wedzicha JA Ers Co-Chair, Miravitles M, Hurst JR, et al. Management of COPD exacerbations: a European Respiratory Society/American Thoracic Society guideline. *Eur Respir J.* 2017 Mar 15;49(3):1600791. doi: 10.1183/13993003.00791-2016. PMID: 28298398.
 - 43. Leuppi JD, Schuetz P, Bingisser R, et al. Short-term vs conventional glucocorticoid therapy in acute exacerbations of chronic obstructive pulmonary disease: the REDUCE randomized clinical trial. *JAMA.* 2013 Jun 5;309(21):2223-31. doi: 10.1001/jama.2013.5023. PMID: 23695200.
 - 44. de Jong YP, Uil SM, Grotjohan HP, et al. Oral or IV prednisolone in the treatment of COPD exacerbations: a randomized, controlled, double-blind study. *Chest.* 2007 Dec;132(6):1741-7. doi: 10.1378/chest.07-0208. Epub 2007 Jul 23. PMID: 17646228.
 - 45. Sivapalan P, Ingebrigtsen TS, Rasmussen DB, et al. COPD exacerbations: the impact of long versus short courses of oral corticosteroids on mortality and pneumonia: nationwide data on 67 000 patients with COPD followed for 12 months. *BMJ Open Respir Res.* 2019 Mar 30;6(1):e000407. doi: 10.1136/bmjresp-2019-000407. PMID: 31179005; PMCID: PMC6530506.
 - 46. Ram FS, Rodriguez-Roisin R, Granados-Navarrete A, et al. Antibiotics for exacerbations of chronic obstructive pulmonary disease. *Cochrane Database Syst Rev.* 2006 Apr 19;(2):CD004403. doi: 10.1002/14651858.CD004403.pub2. Update in: *Cochrane Database Syst Rev.* 2011;(1):CD004403. PMID: 16625602.
 - 47. Clark TW, Medina MJ, Batham S, et al. C-reactive protein level and microbial aetiology in patients hospitalised with acute exacerbation of COPD. *Eur Respir J.* 2015 Jan;45(1):76-86. doi: 10.1183/09031936.00092214. Epub 2014 Sep 3. PMID: 25186260.
 - 48. Wang JX, Zhang SM, Li XH, et al. Acute exacerbations of chronic obstructive pulmonary disease with low serum procalcitonin values do not benefit from antibiotic treatment: a prospective randomized controlled trial. *Int J Infect Dis.* 2016 Jul;48:40-5. doi: 10.1016/j.ijid.2016.04.024. Epub 2016 May 4. PMID: 27155210.
 - 49. Vollenweider DJ, Jarrett H, Steurer-Stey CA, et al. Antibiotics for exacerbations of chronic obstructive pulmonary disease. *Cochrane Database Syst Rev.* 2012 Dec 12;12:CD010257. doi: 10.1002/14651858.CD010257. Update in: *Cochrane Database Syst Rev.* 2018 Oct 29;10:CD010257. PMID: 23235687.
 - 50. Nouira S, Marghli S, Belghith M, et al. Once daily oral ofloxacin in chronic obstructive pulmonary disease exacerbation requiring mechanical ventilation: a randomised placebo-controlled trial. *Lancet.* 2001 Dec 15;358(9298):2020-5. doi: 10.1016/S0140-6736(01)07097-0. PMID: 11755608.
 - 51. Rizkallah J, Man SFP, Sin DD. Prevalence of pulmonary embolism in acute exacerbations of COPD: a systematic review and metaanalysis. *Chest.* 2009 Mar;135(3):786-793. doi: 10.1378/chest.08-1516. Epub 2008 Sep 23. PMID: 18812453.
 - 52. Gunen H, Gulbas G, In E, et al. Venous thromboemboli and exacerbations of COPD. *Eur Respir J.* 2010 Jun;35(6):1243-8. doi: 10.1183/09031936.00120909. Epub 2009

- Nov 19. Erratum in: Eur Respir J. 2010 Nov;36(5):1224. PMID: 19926740.
53. Bertolletti L, Quenet S, Laporte S, et al. Pulmonary embolism and 3-month outcomes in 4036 patients with venous thromboembolism and chronic obstructive pulmonary disease: data from the RIETE registry. *Respir Res.* 2013 Jul 18;14(1):75. doi: 10.1186/1465-9921-14-75. PMID: 23865769; PMCID: PMC3728047.
54. Kahn SR, Lim W, Dunn AS, et al. Prevention of VTE in nonsurgical patients: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. *Chest.* 2012 Feb;141(2 Suppl):e195S-e226S. doi: 10.1378/chest.11-2296. PMID: 22315261; PMCID: PMC3278052.
55. McKeever TM, Hearson G, Housley G, et al. Using venous blood gas analysis in the assessment of COPD exacerbations: a prospective cohort study. *Thorax.* 2016 Mar;71(3):210-5. doi: 10.1136/thoraxjnl-2015-207573. Epub 2015 Dec 1. PMID: 26628461; PMCID: PMC4789825.
56. Fraser JF, Spooner AJ, Dunster KR, et al. Nasal high flow oxygen therapy in patients with COPD reduces respiratory rate and tissue carbon dioxide while increasing tidal and end-expiratory lung volumes: a randomised crossover trial. *Thorax.* 2016 Aug;71(8):759-61. doi: 10.1136/thoraxjnl-2015-207962. Epub 2016 Mar 25. PMID: 27015801; PMCID: PMC4975837.
57. Mauri T, Turrini C, Eronia N, et al. Physiologic Effects of High-Flow Nasal Cannula in Acute Hypoxemic Respiratory Failure. *Am J Respir Crit Care Med.* 2017 May 1;195(9):1207-1215. doi: 10.1164/rccm.201605-0916OC. PMID: 27997805.
58. Lin SM, Liu KX, Lin ZH, et al. Does high-flow nasal cannula oxygen improve outcome in acute hypoxemic respiratory failure? A systematic review and meta-analysis. *Respir Med.* 2017 Oct;131:58-64. doi: 10.1016/j.rmed.2017.08.005. Epub 2017 Aug 9. PMID: 28947043.
59. Nagata K, Kikuchi T, Horie T, et al. Domiciliary High-Flow Nasal Cannula Oxygen Therapy for Patients with Stable Hypercapnic Chronic Obstructive Pulmonary Disease. A Multicenter Randomized Crossover Trial. *Ann Am Thorac Soc.* 2018 Apr;15(4):432-439. doi: 10.1513/AnnalsATS.201706-425OC. PMID: 29283682.
60. Bruni A, Garofalo E, Cammarota G, et al. High Flow Through Nasal Cannula in Stable and Exacerbated Chronic Obstructive Pulmonary Disease Patients. *Rev Recent Clin Trials.* 2019;14(4):247-260. doi: 10.2174/1574887114666190710180540. PMID: 31291880.
61. Frat JP, Coudroy R, Marjanovic N, et al. High-flow nasal oxygen therapy and noninvasive ventilation in the management of acute hypoxemic respiratory failure. *Ann Transl Med.* 2017 Jul;5(14):297. doi: 10.21037/atm.2017.06.52. PMID: 28828372; PMCID: PMC5537116.
62. Brochard L, Mancebo J, Wysocki M, et al. Noninvasive ventilation for acute exacerbations of chronic obstructive pulmonary disease. *N Engl J Med.* 1995 Sep 28;333(13):817-22. doi: 10.1056/NEJM19950928331301. PMID: 7651472.
63. Clinical indications for noninvasive positive pressure ventilation in chronic respiratory failure due to restrictive lung disease, COPD, and nocturnal hypoventilation--a consensus conference report. *Chest.* 1999 Aug;116(2):521-34. doi: 10.1378/chest.116.2.521. PMID: 10453883.
64. Bott J, Carroll MP, Conway JH, et al. Randomised controlled trial of nasal ventilation in acute ventilatory failure due to chronic obstructive airways disease. *Lancet.* 1993 Jun 19;341(8860):1555-7. doi: 10.1016/0140-6736(93)90696-e. PMID: 8099639.

65. Plant PK, Owen JL, Elliott MW. Early use of non-invasive ventilation for acute exacerbations of chronic obstructive pulmonary disease on general respiratory wards: a multicentre randomised controlled trial. Lancet. 2000 Jun 3;355(9219):1931-5. doi: 10.1016/s0140-6736(00)02323-0. PMID: 10859037.
66. Conti G, Antonelli M, Navalesi P, et al. Noninvasive vs. conventional mechanical ventilation in patients with chronic obstructive pulmonary disease after failure of medical treatment in the ward: a randomized trial. Intensive Care Med. 2002 Dec;28(12):1701-7. doi: 10.1007/s00134-002-1478-0. Epub 2002 Aug 30. PMID: 12447511.