

Bölüm 4

ASTIM TEDAVİSİNDE KULLANILAN İLAÇLAR

İrfan ÇINAR¹

GİRİŞ

Pulmoner sistemin birincil işlevi, kan ve atmosfer arasındaki gaz alışverişini sağlamaktır; burada oksijen kana dağılır ve karbondioksit kandan ayrılır. Gaz değişimini etkileyen olaylar kandaki ve dokulardaki oksijen doygunluğunu etkiler ve asit-baz bozukluklarına katkıda bulunur. Akciğerler ve hava yolları atmosfer ile doğrudan temas halinde olduğundan, hastalığa neden olabilecek bir dizi zararlı ajana maruz kalırlar. Pulmoner sistemin en sık görülen hastalıkları, alveolar ventilasyonunun düşmesine ve gaz değişiminin azalmasına neden olabilecek obstrüktif akciğer hastalıklarına katkıda bulunan akut enfeksiyonlar, alerjiler ve inflamasyondur [1]. Bunların sonucu olarak pulmoner sistemi etkileyen en önemli klinik durum ise astımdır.

Astım çeşitli düzeylerde bronkokonstriksiyon, hava yolu hiper-yanıt verme, mukus salgısı ve kronik inflamasyon ile karakterize heterojen bir hastalık olup değişken solunum semptomları ve değişken hava akımı sınırlaması ile karakterize, çocuklarda ve yetişkinlerde en sık görülen akut veya kronik bulaşıcı olmayan hastalıklardan biridir. Astım, dünya çapında yaklaşık 300 milyon insanı etkiler, yılda 250000 ölüme neden olur ve milyarlarca dolarlık sağlık harcamalarından sorumludur[2].

1 Dr. Öğretim Üyesi, Kafkas Üniversitesi Tıp Fakültesi, Tıbbi Farmakoloji AD.
atairfan.nar@mail.com

KAYNAKLAR

1. Rodriguez-Castillo, J.A., et al., Understanding alveolarization to induce lung regeneration. *Respir Res*, 2018. **19**(1): p. 148.
2. Masoli, M., et al., The global burden of asthma: executive summary of the GINA Dissemination Committee report. *Allergy*, 2004. **59**(5): p. 469-78.
3. Kim, H. and J. Mazza, Asthma. *Allergy Asthma Clin Immunol*, 2011. **7 Suppl 1**: p. S2.
4. Lemanske, R.F., Jr. and W.W. Busse, Asthma: clinical expression and molecular mechanisms. *J Allergy Clin Immunol*, 2010. **125**(2 Suppl 2): p. S95-102.
5. Ronmark, E., et al., Incidence of asthma in adults--report from the Obstructive Lung Disease in Northern Sweden Study. *Allergy*, 1997. **52**(11): p. 1071-8.
6. Aberg, N., et al., Prevalence of allergic diseases in schoolchildren in relation to family history, upper respiratory infections, and residential characteristics. *Allergy*, 1996. **51**(4): p. 232-7.
7. Sears, M.R., et al., Relation between airway responsiveness and serum IgE in children with asthma and in apparently normal children. *N Engl J Med*, 1991. **325**(15): p. 1067-71.
8. Simpson, B.M., et al., NAC Manchester Asthma and Allergy Study (NAC-MAAS): risk factors for asthma and allergic disorders in adults. *Clin Exp Allergy*, 2001. **31**(3): p. 391-9.
9. Sheffer, A.L., Allergen avoidance to reduce asthma-related morbidity. *N Engl J Med*, 2004. **351**(11): p. 1134-6.
10. Bunyavanich, S. and E.E. Schadt, Systems biology of asthma and allergic diseases: a multiscale approach. *J Allergy Clin Immunol*, 2015. **135**(1): p. 31-42.
11. Fahy, J.V., Type 2 inflammation in asthma--present in most, absent in many. *Nat Rev Immunol*, 2015. **15**(1): p. 57-65.
12. McCreanor, J., et al., Respiratory effects of exposure to diesel traffic in persons with asthma. *N Engl J Med*, 2007. **357**(23): p. 2348-58.
13. Gehring, U., et al., Traffic-related air pollution and the development of asthma and allergies during the first 8 years of life. *Am J Respir Crit Care Med*, 2010. **181**(6): p. 596-603.
14. Nishimura, K.K., et al., Early-life air pollution and asthma risk in minority children. The GALA II and SAGE II studies. *Am J Respir Crit Care Med*, 2013. **188**(3): p. 309-18.
15. Young, M.T., et al., Ambient air pollution exposure and incident adult asthma in a nationwide cohort of U.S. women. *Am J Respir Crit Care Med*, 2014. **190**(8): p. 914-21.
16. Hsu, H.H., et al., Prenatal Particulate Air Pollution and Asthma Onset in Urban Children. Identifying Sensitive Windows and Sex Differences. *Am J Respir Crit Care Med*, 2015. **192**(9): p. 1052-9.

17. Carr, T.F. and M. Kraft, Update in Asthma 2014. *Am J Respir Crit Care Med*, 2015. **192**(2): p. 157-63.
18. Chen, Y.C., et al., Pathway from central obesity to childhood asthma. Physical fitness and sedentary time are leading factors. *Am J Respir Crit Care Med*, 2014. **189**(10): p. 1194-203.
19. Al-Alwan, A., et al., The nonallergic asthma of obesity. A matter of distal lung compliance. *Am J Respir Crit Care Med*, 2014. **189**(12): p. 1494-502.
20. Brown, R.H., Obesity and asthma: "What we've got here is failure to communicate". *Am J Respir Crit Care Med*, 2014. **189**(12): p. i-ii.
21. Sigurs, N., et al., Asthma and allergy patterns over 18 years after severe RSV bronchiolitis in the first year of life. *Thorax*, 2010. **65**(12): p. 1045-52.
22. Jackson, D.J., et al., Wheezing rhinovirus illnesses in early life predict asthma development in high-risk children. *Am J Respir Crit Care Med*, 2008. **178**(7): p. 667-72.
23. Carolan, B.J. and E.R. Sutherland, Clinical phenotypes of chronic obstructive pulmonary disease and asthma: recent advances. *J Allergy Clin Immunol*, 2013. **131**(3): p. 627-34; quiz 635.
24. Wenzel, S.E., Asthma phenotypes: the evolution from clinical to molecular approaches. *Nat Med*, 2012. **18**(5): p. 716-25.
25. Wenzel, S.E., Asthma: defining of the persistent adult phenotypes. *Lancet*, 2006. **368**(9537): p. 804-13.
26. Chang, T.S., et al., Childhood asthma clusters and response to therapy in clinical trials. *J Allergy Clin Immunol*, 2014. **133**(2): p. 363-9.
27. Pike, K.C., et al., Managing problematic severe asthma: beyond the guidelines. *Arch Dis Child*, 2018. **103**(4): p. 392-397.
28. Johnson, M., Molecular mechanisms of beta(2)-adrenergic receptor function, response, and regulation. *J Allergy Clin Immunol*, 2006. **117**(1): p. 18-24; quiz 25.
29. Nelson, H.S., Beta-adrenergic bronchodilators. *N Engl J Med*, 1995. **333**(8): p. 499-506.
30. MD, K.T., DRUGS FOR COUGH AND BRONCHIAL ASTHMA. *Essentials of Medical Pharmacology*, 2013. **Seventh Edition**:: p. 218-234.
31. Bazargani, Y.T., et al., Essential medicines for COPD and asthma in low and middle-income countries. *Thorax*, 2014. **69**(12): p. 1149-51.
32. Naidu Sjosward, K., et al., Metabolism of salbutamol differs between asthmatic patients and healthy volunteers. *Pharmacol Toxicol*, 2003. **92**(1): p. 27-32.
33. Nakpheng, T., et al., Evidences for salbutamol metabolism by respiratory and liver cell lines. *Drug Metab Pharmacokinet*, 2017. **32**(2): p. 127-134.
34. Jones, G.H. and S.J. Scott, Continuous infusions of terbutaline in asthma - a review. *J Asthma*, 2011. **48**(8): p. 753-6.
35. Becker, A.B. and E.M. Abrams, Asthma guidelines: the Global Initiative for Asthma in relation to national guidelines. *Curr Opin Allergy Clin Immunol*, 2017. **17**(2): p. 99-103.

36. Papi, A., et al., Inhaler devices for asthma: a call for action in a neglected field. *Eur Respir J*, 2011. **37**(5): p. 982-5.
37. Virchow, J.C., et al., Importance of inhaler devices in the management of airway disease. *Respir Med*, 2008. **102**(1): p. 10-9.
38. Paik, J., L.J. Scott, and R.A. Pleasants, Fluticasone Propionate/Salmeterol MDPI (AirDuo RespiClick((R))): A Review in Asthma. *Clin Drug Investig*, 2018. **38**(5): p. 463-473.
39. Rabe, K.F., H. Magnussen, and G. Dent, Theophylline and selective PDE inhibitors as bronchodilators and smooth muscle relaxants. *Eur Respir J*, 1995. **8**(4): p. 637-42.
40. Dent, G., et al., Theophylline suppresses human alveolar macrophage respiratory burst through phosphodiesterase inhibition. *Am J Respir Cell Mol Biol*, 1994. **10**(5): p. 565-72.
41. Greene, S.C., et al., Theophylline toxicity: An old poisoning for a new generation of physicians. *Turk J Emerg Med*, 2018. **18**(1): p. 37-39.
42. Monteiro, J., et al., Pharmacological potential of methylxanthines: Retrospective analysis and future expectations. *Crit Rev Food Sci Nutr*, 2019. **59**(16): p. 2597-2625.
43. Zhang, Z.Y. and L.S. Kaminsky, Characterization of human cytochromes P450 involved in theophylline 8-hydroxylation. *Biochem Pharmacol*, 1995. **50**(2): p. 205-11.
44. Nahata, M., Drug interactions with azithromycin and the macrolides: an overview. *J Antimicrob Chemother*, 1996. **37 Suppl C**: p. 133-42.
45. Barnes, P.J., The pharmacological properties of tiotropium. *Chest*, 2000. **117**(2 Suppl): p. 63S-6S.
46. Salpeter, S.R., N.S. Buckley, and E.E. Salpeter, Meta-analysis: anticholinergics, but not beta-agonists, reduce severe exacerbations and respiratory mortality in COPD. *J Gen Intern Med*, 2006. **21**(10): p. 1011-9.
47. Lubinski, W., [Tiotropium as a controller of bronchoconstriction]. *Pol Merkur Lekarski*, 2004. **16 Suppl 1**: p. 75-6, 78.
48. Kanaoka, Y. and J.A. Boyce, Cysteinyl leukotrienes and their receptors; emerging concepts. *Allergy Asthma Immunol Res*, 2014. **6**(4): p. 288-95.
49. Chauhan, B.F. and F.M. Ducharme, Anti-leukotriene agents compared to inhaled corticosteroids in the management of recurrent and/or chronic asthma in adults and children. *Cochrane Database Syst Rev*, 2012(5): p. CD002314.
50. Badri, T. and V. Takov, Montelukast, in *StatPearls*. 2020: Treasure Island (FL).
51. Nagao, M., et al., Early control treatment with montelukast in preschool children with asthma: A randomized controlled trial. *Allergol Int*, 2018. **67**(1): p. 72-78.
52. Zhang, Y.F. and L.D. Yang, Exercise training as an adjunctive therapy to montelukast in children with mild asthma: A randomized controlled trial. *Medicine (Baltimore)*, 2019. **98**(2): p. e14046.

53. Sin, D.D., et al., Pharmacological management to reduce exacerbations in adults with asthma: a systematic review and meta-analysis. *JAMA*, 2004. **292**(3): p. 367-76.
54. Papi, A., et al., Asthma. *Lancet*, 2018. **391**(10122): p. 783-800.
55. Juniper, E.F., et al., Effect of long-term treatment with an inhaled corticosteroid (budesonide) on airway hyperresponsiveness and clinical asthma in nonsteroid-dependent asthmatics. *Am Rev Respir Dis*, 1990. **142**(4): p. 832-6.
56. Kuhl, K. and N.A. Hanania, Targeting IgE in asthma. *Curr Opin Pulm Med*, 2012. **18**(1): p. 1-5.
57. Humbert, M., et al., Omalizumab in asthma: an update on recent developments. *J Allergy Clin Immunol Pract*, 2014. **2**(5): p. 525-36 e1.
58. Humbert, M., et al., Benefits of omalizumab as add-on therapy in patients with severe persistent asthma who are inadequately controlled despite best available therapy (GINA 2002 step 4 treatment): INNOVATE. *Allergy*, 2005. **60**(3): p. 309-16.
59. Hanania, N.A., et al., Omalizumab in severe allergic asthma inadequately controlled with standard therapy: a randomized trial. *Ann Intern Med*, 2011. **154**(9): p. 573-82.
60. Brusselle, G., et al., "Real-life" effectiveness of omalizumab in patients with severe persistent allergic asthma: The PERSIST study. *Respir Med*, 2009. **103**(11): p. 1633-42.
61. Braunstahl, G.J., et al., The eXpeRIence registry: the 'real-world' effectiveness of omalizumab in allergic asthma. *Respir Med*, 2013. **107**(8): p. 1141-51.
62. Grimaldi-Bensouda, L., et al., Does omalizumab make a difference to the real-life treatment of asthma exacerbations?: Results from a large cohort of patients with severe uncontrolled asthma. *Chest*, 2013. **143**(2): p. 398-405.
63. Kornmann, O., et al., Omalizumab in patients with allergic (IgE-mediated) asthma and IgE/bodyweight combinations above those in the initially approved dosing table. *Pulm Pharmacol Ther*, 2014. **28**(2): p. 149-53.
64. Hew, M., et al., Real-life effectiveness of omalizumab in severe allergic asthma above the recommended dosing range criteria. *Clin Exp Allergy*, 2016. **46**(11): p. 1407-1415.