26. BÖLÜM

OSAS VE HİPERTANSİYON TEDAVİSİ

Deniz Dilan NAKİ TEKİN[1]

GİRİŞ

Uyku ile ilişkili solunum bozuklukları, merkezi sinir ve kardiyovasküler sistemlerde eşlik eden değişikliklere yol açar ve bu tür değişiklikler genellikle ek sağlık sorunlarına neden olur. Uykuda solunum bozukluğu, uyku ile ilişkili geniş bir solunum anormalliği yelpazesini temsil eder. Obstrüktif uyku apnesi (OSA), uyku sırasında farinksin tekrarlayan kısmi veya tam çöküşünün olduğu bir durumdur. Gündüz aşırı uykululuk ile ilişkili OSA, genellikle obstrüktif uyku apne sendromu (OUAS) olarak adlandırılır. OUAS, uyku ile ilişkili en yaygın solunum anormalliğidir (1,2) ve sıklıkla horlamaya yol açabilen apne veya hipopne ile sonuçlanır.

Özellikle, tedavi edilmemiş OUAS'ın hipertansiyon, kardiyak iskemi, miyokard enfarktüsü, konjestif kalp yetmezliği ve inmenin kaynağı ve / veya gelişiminin altında yatan patofizyolojik mekanizmalara katkıda bulunabileceğine dair kanıtlar vardır (3). Hastalardaki OUAS'ın farklı olası sonuçlarından en yaygın olarak tanınan, sistemik hipertansiyon gelişimi olabilir. Pek çok derleme OUAS ve hipertansiyon arasındaki ilişkiyi tanımlasa da, bu derlemede OUAS'ı hipertansiyona bağlayan tanı, prevalans, etiyoloji ve yeni mekanizmalar özetlenmiştir.

Obstrüktif uyku apne sendromu (OUAS), uyku sırasında arteriyel oksijen satürasyonunun azalması ve tekrarlayan üst hava yolu tıkanıklığı atakları ile sıklıkla tanımlanan bir sendromdur. OUAS hastalarının en önemli komplikasyonları kardiyovasküler sisteme aittir. Sistemik arteriyel hipertansiyon (%43-60), pulmoner hipertansiyon (% 20-30), koroner arter hastalığı (%20-30) ve konjestif kalp yetmezliği (%5-10) OUAS ile ilişkili kardiyovasküler hastalık yelpazesi arasındadır (4).

OUAS, uyku sırasında geçici asfixiye yol açan, üst hava yolu çökmesinden kaynaklanan yaygın bir hastalıktır. Bu olaylar nedeniyle hastalar aralıklı hipoksemi beyin uyarılmaları uyku bozuklukları gündüz uyku hali , düşük yaşam kalitesi yaşarlar. Bununla birlikte bu olaylar olumsuz kardiyovaskuler sonuçlara yol açabilecek önemli metabolik ve nörohormonal bozukluklara yol açar (5). Gelişmiş ülkelerde

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KAYNAKLAR

1. Parati G, Lombardi C, Narkiewicz K. Sleep apnea: epidemiology, pathophysiology, and relation to cardiovascular risk. Am J Physiol Regul Integr Comp Physiol. 2007;293:R1671–83. [Google Scholar]
2. Weiss JW, Liu MD, Huang J. Physiological basis for a causal relationship of obstructive sleep apnoea to hypertension. Exp Physiol. 2007;92:21–6.
3. Kohler M, Stradling JR. Mechanisms of vascular damage in obstructive sleep apnea. Nat Rev Cardiol. 2010;7:677–85.
4. Bayram NA,Anatol J Cardiol. 2007; 7(4): 378-382 Relationship between the severity of obstructive sleep apnea and hypertension
5. Logan AG, Perlikowski SM, Mente A, et al. High prevalence of unrecognized sleep apnoea in drug-resistant hypertension. J Hypertens. 2001;19(12):2271-2277.
6. Young T, Peppard P, Palta M, et al. Population-based study of sleep-disordered breathing as a risk factor for hypertension. *Arch Intern Med*. 1997;157(15):1746-1752.
7. Nieto FJ, Young TB, Lind BK, et al. Association of sleep-disordered breathing, sleep apnea, and hypertension in a large community-based study. Sleep Heart Health Study. *JAMA*. 2000;283(14):1829-1836.
8. Silverberg DS, Oksenberg A. Are sleep-related breathing disorders important contributing factors to the production of essential hypertension? Curr Hypertens Rep. 2001;3(3):209-215.
9. Logan AG, Perlikowski SM, Mente A, et al. High prevalence of unrecognized sleep apnoea in drug-resistant hypertension. J Hypertens. 2001;19(12):2271-2277.
10. Lavie P, Herer P, Hoffstein V. Obstructive sleep apnoea syndrome as a risk factor for hypertension: population study. BMJ. 2000;320(7233): 479-482.
11. Sánchez-de-la-Torre M, Campos-Rodriguez F, Barbé F. Obstructive sleep apnoea and cardiovascular disease. Lancet Respir Med. 2013;1(1):61-72.
12. hamb M, Unruh M. Bidirectional relationship of hypertension with obstructive sleep apnea. Curr Opin Pulm Med. 2014;20(6):558-564.
13. FriedmanO,BradleyTD,ChanCT,ParkesR,LoganAG.Relationship between overnight rostral fluid shift and obstructive sleep apnea in drug-resistant hypertension. *Hypertension*. 2010;56(6):1077-1082.
14. Wolk R, Somers VK. Obesity-related cardiovascular disease: implications of obstructive sleep apnea. *Diabetes Obes Metab*. 2006; 8(3):250-260.
15. Lam JC, Sharma SK, Lam B. Obstructive sleep apnoea: definitions, epidemiology & natural history. Indian J Med Res. 2010;131:165–70.
16. Sleep-related breathing disorders in adults: recommendations for syndrome definition and measurement techniques in clinical research. The Report of an American Academy of Sleep Medicine Task Force. Sleep. 1999;22:667–89.
17. Baguet JP, Narkiewicz K, Mallion JM. Update on hypertension management: obstructive sleep apnea and hypertension. J Hypertens. 2006;24:205–8.
18. Silverberg DS, Oksenberg A, Iaina A. Sleep-related breathing disorders as a major cause of essential hypertension: fact or fiction? Curr Opin Nephrol Hypertens. 1998;7:353–7. Fletcher EC, DeBehnke RD, Lovoi MS, Gorin AB. Undiagnosed sleep apnea in patients with essential hypertension. Ann Intern Med. 1985;103:190–5.
19. Peppard PE, Young T, Palta M, Skatrud J. Prospective study of the association between sleep-disordered breathing and hypertension. N Engl J Med. 2000;342:1378–84.

20. Hla KM, Young TB, Bidwell T, Palta M, Skatrud JB, Dempsey J. Sleep apnea and hypertension. A population-based study. Ann Intern Med. 1994;120:382–8.
21. Sharabi Y, Scope A, Chorney N, Grotto I, Dagan Y. Diastolic blood pressure is the first to rise in association with early subclinical obstructive sleep apnea: lessons from periodic examination screening. Am J Hypertens. 2003;16:236–9.
22. Sin DD, Fitzgerald F, Parker JD, Newton GE, Logan AG, Floras JS, Relationship of systolic BP to obstructive sleep apnea in patients with heart failure. Chest. 2003;123:1536–43.
23. Planes C, Leroy M, Fayet G, Aegerter P, Foucher A, Raffestin B. Exacerbation of sleep-apnoea related nocturnal blood-pressure fluctuations in hypertensive subjects. Eur Respir J. 2002;20:151–7.
24. Bonsignore MR, Parati G, Insalaco G, Marrone O, Castiglioni P, Romano S, Continuous positive airway pressure treatment improves baroreflex control of heart rate during sleep in severe obstructive sleep apnea syndrome. Am J Respir Crit Care Med. 2002;166:279–86.
25. Kario K, Matsuo T, Kobayashi H, Imiya M, Matsuo M, Shimada K. Nocturnal fall of blood pressure and silent cerebrovascular damage in elderly hypertensive patients. Advanced silent cerebrovascular damage in extreme dippers. Hypertension. 1996;27:130–5 Boggia J, Li Y, Thijs L, Hansen TW, Kikuya M, Bjorklund-Bodegard K, Prognostic accuracy of day versus night ambulatory blood pressure: a cohort study. Lancet. 2007;370:1219–29. Baguet JP, Hammer L, Levy P, Pierre H, Rossini E, Mouret S, Night-time and diastolic hypertension are common and underestimated conditions in newly diagnosed apnoeic patients. J Hypertens. 2005;23:521–7.
26. Lavie P, Yoffe N, Berger I, Peled R. The relationship between the severity of sleep apnea syndrome and 24-h blood pressure values in patients with obstructive sleep apnea. Chest. 1993;103:717–21.
27. Noda A, Yasuma F, Okada T, Yokota M. Influence of movement arousal on circadian rhythm of blood pressure in obstructive sleep apnea syndrome. J Hypertens. 2000;18:539–44.
28. Planes C, Leroy M, Fayet G, Aegerter P, Foucher A, Raffestin B. Exacerbation of sleep-apnoea related nocturnal blood-pressure fluctuations in hypertensive subjects. Eur Respir J. 2002;20:151–7. Portaluppi F, Provini F, Cortelli P, Plazzi G, Bertozzi N, Manfredini R, Undiagnosed sleep-disordered breathing among male nondippers with essential hypertension. J Hypertens. 1997;15:1227–33.
29. Gottlieb DJ, Redline S, Nieto FJ, Baldwin CM, Newman AB, Resnick HE, Association of usual sleep duration with hypertension: the Sleep Heart Health Study. Sleep. 2006;29:1009–14.
30. Calhoun DA, Jones D, Textor S, Goff DC, Murphy TP, Toto RD, Resistant hypertension: diagnosis, evaluation, and treatment: a scientific statement from the American Heart Association Professional Education Committee of the Council for High Blood Pressure Research. Circulation. 2008;117:e510–26.
31. Logan AG, Perlikowski SM, Mente A, Tisler A, Tkacova R, Niroumand M, High prevalence of unrecognized sleep apnoea in drug-resistant hypertension. J Hypertens. 2001;19:2271–7.
32. Pratt-Ubunama MN, Nishizaka MK, Boedefeld RL, Cofield SS, Harding SM, Calhoun DA. Plasma aldosterone is related to severity of obstructive sleep apnea in subjects with resistant hypertension. Chest. 2007;131:453–9.
33. Pickering TG, Miller NH, Ogedegbe G, Krakoff LR, Artinian NT, Goff D. Call to action on use and reimbursement for home blood pressure monitoring: a joint scientific statement from the American Heart Association, American Society Of Hypertension, and Preventive Cardiovascular Nurses Association. Hypertension. 2008;52:10–29.
34. Pickering TG, Eguchi K, Kario K. Masked hypertension: a review. Hypertens Res. 2007;30:479–88.

35. Baguet JP, Levy P, Barone-Rochette G, Tamisier R, Pierre H, Peeters M, Masked hypertension in obstructive sleep apnea syndrome. J Hypertens. 2008;26:885–92.
36. Drager LF, Diegues-Silva L, Diniz PM, Bortolotto LA, Pedrosa RP, Couto RB, Obstructive sleep apnea, masked hypertension, and arterial stiffness in men. Am J Hypertens. 2010;23:249–54.
37. Mak RH, Bakris G. Pediatrics: masked hypertension: a risk factor in children with CKD. Nat Rev Nephrol. 2010;6:132–4.
38. Weitzenblum E, Krieger J, Apprill M, Vallee E, Ehrhart M, Ratomaharo J, Daytime pulmonary hypertension in patients with obstructive sleep apnea syndrome. Am Rev Respir Dis. 1988;138:345–9.
39. Marrone O, Bellia V, Ferrara G, Milone F, Romano L, Salvaggio A, Transmural pressure measurements. Importance in the assessment of pulmonary hypertension in obstructive sleep apneas. Chest. 1989;95:338–42.
40. Chaouat A, Weitzenblum E, Krieger J, Oswald M, Kessler R. Pulmonary hemodynamics in the obstructive sleep apnea syndrome. Results in 220 consecutive patients. Chest. 1996;109:380–6.
41. Sanner BM, Doberauer C, Konermann M, Sturm A, Zidek W. Pulmonary hypertension in patients with obstructive sleep apnea syndrome. Arch Intern Med. 1997;157:2483–7.
42. Garvey JF, Taylor CT, McNicholas WT. Cardiovascular disease in obstructive sleep apnoea syndrome: the role of intermittent hypoxia and inflammation. Eur Respir J. 2009;33:1195–205.
43. Kanagy NL, Walker BR, Nelin LD. Role of endothelin in intermittent hypoxia-induced hypertension. Hypertension. 2001;37:511–15.
44. Lesske J, Fletcher EC, Bao G, Unger T. Hypertension caused by chronic intermittent hypoxia—influence of chemoreceptors and sympathetic nervous system. J Hypertens. 1997;15:1593–603.
45. Deanfield J, Donald A, Ferri C, Giannattasio C, Halcox J, Halligan S, Endothelial function and dysfunction. Part I: Methodological issues for assessment in the different vascular beds: a statement by the Working Group on Endothelin and Endothelial Factors of the European Society of Hypertension. J Hypertens. 2005;23:7–17.
46. Budhiraja R, Parthasarathy S, Quan SF. Endothelial dysfunction in obstructive sleep apnea. J Clin Sleep Med. 2007;3:409–15.
47. Duchna HW, Stoohs R, Guilleminault C, Christine Anspach M, Schultze-Werninghaus G, Orth M. Vascular endothelial dysfunction in patients with mild obstructive sleep apnea syndrome. Wien Med Wochenschr. 2006;156:596–604.
48. Carlson JT, Rangemark C, Hedner JA. Attenuated endothelium-dependent vascular relaxation in patients with sleep apnoea. J Hypertens. 1996;14:577–84.
49. Kato M, Roberts-Thomson P, Phillips BG, Haynes WG, Winnicki M, Accurso V, Impairment of endothelium-dependent vasodilation of resistance vessels in patients with obstructive sleep apnea. Circulation. 2000;102:2607–10.
50. Teramoto S, Kume H, Matsuse T, Ishii T, Miyashita A, Akishita M, Oxygen administration improves the serum level of nitric oxide metabolites in patients with obstructive sleep apnea syndrome. Sleep Med. 2003;4:403–7.
51. Ohike Y, Kozaki K, Iijima K, Eto M, Kojima T, Ohga E, Amelioration of vascular endothelial dysfunction in obstructive sleep apnea syndrome by nasal continuous positive airway pressure—possible involvement of nitric oxide and asymmetric NG, NG-dimethylarginine. Circ J. 2005;69:221–6.
52. elic S, Padeletti M, Kawut SM, Higgins C, Canfield SM, Onat D, Inflammation, oxidative stress, and repair capacity of the vascular endothelium in obstructive sleep apnea. Circulation. 2008;117:2270–8.
53. Kohler M, Stradling JR. Mechanisms of vascular damage in obstructive sleep apnea. Nat Rev Cardiol. 2010;7:677–85.

54. Ryan S, Taylor CT, McNicholas WT. Selective activation of inflammatory pathways by intermittent hypoxia in obstructive sleep apnea syndrome. Circulation. 2005;112:2660–7.
55. Greenberg H, Ye X, Wilson D, Htoo AK, Hendersen T, Liu SF. Chronic intermittent hypoxia activates nuclear factor-kappaB in cardiovascular tissues in vivo. Biochem Biophys Res Commun. 2006;343:591–6.
56. Ryan S, Taylor CT, McNicholas WT. Predictors of elevated nuclear factor-kappaB-dependent genes in obstructive sleep apnea syndrome. Am J Respir Crit Care Med. 2006;174:824–30.
57. Kansanen M, Vanninen E, Tuunainen A, Pesonen P, Tuononen V, Hartikainen J, The effect of a very low-calorie diet-induced weight loss on the severity of obstructive sleep apnoea and autonomic nervous function in obese patients with obstructive sleep apnoea syndrome. Clin Physiol. 1998;18:377–85.
58. Rubinstein I, Colapinto N, Rotstein LE, Brown IG, Hoffstein V. Improvement in upper airway function after weight loss in patients with obstructive sleep apnea. Am Rev Respir Dis. 1988;138:1192–5.
59. Sullivan CE, Issa FG, Berthon-Jones M, Eves L. Reversal of obstructive sleep apnoea by continuous positive airway pressure applied through the nares. Lancet. 1981;1:862–5.
60. Wilcox I, Grunstein RR, Hedner JA, Doyle J, Collins FL, Fletcher PJ, Effect of nasal continuous positive airway pressure during sleep on 24-hour blood pressure in obstructive sleep apnea. Sleep. 1993;16:539–44.
61. Pepperell JC, Ramdassingh-Dow S, Crosthwaite N, Mullins R, Jenkinson C, Stradling JR, Ambulatory blood pressure after therapeutic and subtherapeutic nasal continuous positive airway pressure for obstructive sleep apnoea: a randomised parallel trial. Lancet. 2002;359:204–10.
62. Robinson GV, Smith DM, Langford BA, Davies RJ, Stradling JR. Continuous positive airway pressure does not reduce blood pressure in nonsleepy hypertensive OSA patients. Eur Respir J. 2006;27:1229–35.
63. Robinson GV, Smith DM, Langford BA, Davies RJ, Stradling JR. Continuous positive airway pressure does not reduce blood pressure in nonsleepy hypertensive OSA patients. Eur Respir J. 2006;27:1229–35.
64. Bazzano LA, Khan Z, Reynolds K, He J. Effect of nocturnal nasal continuous positive airway pressure on blood pressure in obstructive sleep apnea. Hypertension. 2007;50:417–23.
65. Haentjens P, Van Meerhaeghe A, Moscariello A, De Weerdt S, Poppe K, Dupont A, The impact of continuous positive airway pressure on blood pressure in patients with obstructive sleep apnea syndrome: evidence from a meta-analysis of placebo-controlled randomized trials. Arch Intern Med. 2007;167:757–64.
66. Alajmi M, Mulgrew AT, Fox J, Davidson W, Schulzer M, Mak E, Impact of continuous positive airway pressure therapy on blood pressure in patients with obstructive sleep apnea hypopnea: a meta-analysis of randomized controlled trials. Lung. 2007;185:67–72.
67. Peppard PE, Young T, Palta M, Dempsey J, Skatrud J. Longitudinal study of moderate weight change and sleep-disordered breathing. JAMA 2000;284:3015 – 3021.