

Bölüm 2

OSTEOPOROZ TANI VE TEDAVİSİ

Ferda BÜYÜK¹

TANIM

Osteoporoz (OP), kemik kitlesinde azalma ve kemik dokusunun mikro-mimari yapısının bozulması sonucu artmış kemik kırılabilirliğiyle karakterize kemiğin en sık görülen metabolik hastalığıdır (1). OP, spontan olarak ya da minimal travmayla kırık oluşturan kadar sessiz seyreder. Kırık gelişmeden hastalığı teşhis etmek, önlemek ve tedavi etmek son derece önemlidir. Bu da kemik mineral yoğunluğunun (KMY) ölçümü ile mümkün olmaktadır (2). Dünya Sağlık Örgütü (DSÖ) osteoporozu lomber vertebralardan ve kalçadan yapılan ortalama KMY ölçümünün, genç erişkin popülasyon değerlerine göre 2,5 standart deviasyona (SD) eşit veya daha düşük olması şeklinde tanımlamıştır (Tablo 1) (3).

Tanı	Tanım
Normal	Genç erişkin ortalama değerine göre kemik mineral yoğunluğunun 1 SD altında olması (T skoru ≥ -1)
Osteopeni	Genç erişkin ortalama değerine göre kemik mineral yoğunluğunun 1 ile 2.5 SD arasında olması (T skoru < -1 ile > -2.5)
Osteoporoz	Genç erişkin ortalama değerine göre kemik mineral yoğunluğunun 2.5 SD altında olması (T skoru ≤ -2.5)
Yerleşmiş Osteoporoz	Genç erişkin ortalama değerine göre kemik mineral yoğunluğunun 2,5 SD'dan daha yüksek olması ile 1 veya daha fazla fragilite fraktür öyküsü (T skoru ≤ -2.5)

SD: standart deviasyon

¹ Uzm. Dr., Yozgat Şehir Hastanesi, Fiziksel Tıp ve Rehabilitasyon Kliniği, ferda-84@hotmail.com, ORCID iD: 0000-0003-3748-3109

sağlığı problemidir. Risk faktörlerine sahip her hastanın erken dönemde değerlendirilmesi kırıkların önlenmesi ve tedavisi açısından önemlidir.

KAYNAKÇA

1. Klibanski A, Adams-Campbell L, Bassford T, et al. Osteoporosis prevention, diagnosis, and therapy. *Journal of the American Medical Association*. 2001;285(6):785-795.
2. Cosman F, de Beur SJ, LeBoff M, et al. Clinician's guide to prevention and treatment of osteoporosis. *Osteoporosis international*. 2014;25:2359-2381.
3. Cooper C, Campion G, Melton 3rd LJ. *Epidemiology of osteoporosis Trends Endocrinol Metab*. 1992;3(6):224-229.
4. Chadha M, Chaddha R, Divakar H, et al. Osteoporosis: Epidemiology, Pathogenesis, Evaluation and Treatment. *Open Journal of Orthopedics*. 2022;12(4):153-182.
5. Organization WH, editor WHO scientific group on the assessment of osteoporosis at primary health care level. Summary meeting report; 2004.
6. Wáng YXJ, Santiago FR, Deng M, et al. Identifying osteoporotic vertebral endplate and cortex fractures. *Quantitative imaging in medicine and surgery*. 2017;7(5):555.
7. Dhanwal D, Siwach R, Dixit V, et al. Incidence of hip fracture in Rohtak district, North India. *Archives of osteoporosis*. 2013;8:1-5.
8. Chen I-J, Chiang C-YF, Li Y-H, et al. Nationwide cohort study of hip fractures: time trends in the incidence rates and projections up to 2035. *Osteoporosis International*. 2015;26:681-688.
9. Tuzun S, Eskiuyurt N, Akarirmak U, et al. Incidence of hip fracture and prevalence of osteoporosis in Turkey: the FRACTURK study. *Osteoporosis international*. 2012;23:949-955.
10. Beyazova M, Kutsal YG. Fiziksel tıp ve rehabilitasyon: Güneş Tıp Kitabevleri; 2016. 2149-2175 p.
11. Manolagas SC. From estrogen-centric to aging and oxidative stress: a revised perspective of the pathogenesis of osteoporosis. *Endocrine reviews*. 2010;31(3):266-300.
12. Erdinç Gündüz N AE. Osteoporoz Patofizyolojisi. *Türkiye Klinikleri Fiziksel Tıp ve Rehabilitasyon Osteoporoz Özel Sayısı*. 2019:6-16.
13. Slemenda CW, Hui SL, Longcope C, et al. Cigarette smoking, obesity, and bone mass. *Journal of Bone and Mineral Research*. 1989;4(5):737-741.
14. Laitinen K, Valimäki M. Alcohol and bone. *Calcified tissue international*. 1991;49:S70-S73.
15. Tüzün Ş KEA. Osteoporozun Tanımı ve Sınıflandırması ve Epidemiyolojik Çalışmalar. *Türkiye Klinikleri Fiziksel Tıp ve Rehabilitasyon Osteoporoz Özel Sayısı*. 2019;1:1-5.
16. Murat S DKD. Sekonder Osteoporoz. *Türkiye Klinikleri Fiziksel Tıp ve Rehabilitasyon Osteoporoz Özel Sayısı*. 2019:26-34.
17. Brown JP, Josse RG, Canada SACotOSo. 2002 clinical practice guidelines for the diagnosis and management of osteoporosis in Canada. *Cmaj*. 2002;167(10 suppl):S1-S34.
18. Nuti R, Brandi ML, Checchia G, et al. Guidelines for the management of osteoporosis and fragility fractures. *Internal and emergency medicine*. 2019;14:85-102.
19. Roux C, Fechtenbaum J, Kolta S, et al. Mild prevalent and incident vertebral fractures are risk factors for new fractures. *Osteoporosis international*. 2007;18:1617-1624.
20. Özsoy Ünübol T AG. Osteoporozda Risk Faktörleri. *türkiye Klinikleri Fiziksel Tıp ve Rehabilitasyon Osteoporoz Özel Sayısı*. 2019:17-25.

21. A Y. Osteoporozda Radyolojik Görüntüleme ve Kırık Riskinin Değerlendirilmesi. *Türkiye Klinikleri Fiziksel Tıp ve Rehabilitasyon Osteoporoz Özel Sayısı*. 2019;35-46.
22. Guzon-Illescas O, Perez Fernandez E, Crespi Villarias N, et al. Mortality after osteoporotic hip fracture: incidence, trends, and associated factors. *Journal of orthopaedic surgery and research*. 2019;14(1):1-9.
23. O'Neill TW, Roy DK. How many people develop fractures with what outcome? *Best Practice & Research Clinical Rheumatology*. 2005;19(6):879-895.
24. Cree M, Soskolne CL, Belseck E, et al. Mortality and institutionalization following hip fracture. *Journal of the American Geriatrics Society*. 2000;48(3):283-288.
25. Camacho PM, Petak SM, Binkley N, et al. American Association of Clinical Endocrinologists/American College of Endocrinology clinical practice guidelines for the diagnosis and treatment of postmenopausal osteoporosis—2020 update. *Endocrine Practice*. 2020;26:1-46.
26. Hepgüler AS GD. Osteoporozda laboratuvar ve kemik döngü belirteçleri. *Türkiye Klinikleri Fiziksel Tıp ve Rehabilitasyon Osteoporoz Özel Sayısı*. 2019:53-60.
27. Eastell R, Szulc P. Use of bone turnover markers in postmenopausal osteoporosis. *The lancet Diabetes & endocrinology*. 2017;5(11):908-923.
28. Kanis J. Assessment of osteoporosis at the primary health-care level. Technical Report. <http://www.shef.ac.uk/FRAX>. 2008.
29. Sozen T, Gogas Yavuz D, Akalın A. Metabolik kemik hastalıkları tanı ve tedavi kılavuzu. *Türkiye Endokrinoloji ve Metabolizma Derneği*. 2014;1:19-27.
30. Kanis J, McCloskey E, Johansson H, et al. Case finding for the management of osteoporosis with FRAX®—assessment and intervention thresholds for the UK. *Osteoporosis international*. 2008;19:1395-1408.
31. Siris ES, Miller PD, Barrett-Connor E, et al. Identification and fracture outcomes of undiagnosed low bone mineral density in postmenopausal women: results from the National Osteoporosis Risk Assessment. *Jama*. 2001;286(22):2815-2822.
32. Kutsal YG. Kemik mineral yoğunluğu ölçümü ve kemik yapının görüntülenmesi. *Türkiye Klinikleri Fiziksel Tıp ve Rehabilitasyon Osteoporoz Özel Sayısı*. 2019:27-52.
33. Krebs J, Agellon LB, Michalak M. Ca²⁺ homeostasis and endoplasmic reticulum (ER) stress: An integrated view of calcium signaling. *Biochemical and biophysical research communications*. 2015;460(1):114-121.
34. Blaine J, Chonchol M, Levi M. Renal control of calcium, phosphate, and magnesium homeostasis. *Clinical journal of the American Society of Nephrology: CJASN*. 2015;10(7):1257.
35. Holick MF, Binkley NC, Bischoff-Ferrari HA, et al. Evaluation, treatment, and prevention of vitamin D deficiency: an Endocrine Society clinical practice guideline. *The Journal of clinical endocrinology & metabolism*. 2011;96(7):1911-1930.
36. Varenna M, Bertoldo F, Di Monaco M, et al. Safety profile of drugs used in the treatment of osteoporosis: a systematical review of the literature. *Reumatismo*. 2013;65(4):143.
37. Zanker J, Duque G. Osteoporosis in older persons: old and new players. *Journal of the American Geriatrics Society*. 2019;67(4):831-840.
38. Lorentzon M. Treating osteoporosis to prevent fractures: current concepts and future developments. *Journal of internal medicine*. 2019;285(4):381-394.
39. Black DM, Rosen CJ. Postmenopausal osteoporosis. *New England Journal of Medicine*. 2016;374(3):254-262.

40. Mellström D, Sörensen O, Goemaere S, et al. Seven years of treatment with risedronate in women with postmenopausal osteoporosis. *Calcified tissue international*. 2004;75:462-468.
41. Black DM, Delmas PD, Eastell R, et al. Once-yearly zoledronic acid for treatment of postmenopausal osteoporosis. *New England Journal of Medicine*. 2007;356(18):1809-1822.
42. Chesnut III CH, Skag A, Christiansen C, et al. Effects of oral ibandronate administered daily or intermittently on fracture risk in postmenopausal osteoporosis. *Journal of bone and mineral research*. 2004;19(8):1241-1249.
43. Compston J, Cooper A, Cooper C, et al. UK clinical guideline for the prevention and treatment of osteoporosis. *Archives of osteoporosis*. 2017;12:1-24.
44. Silverman S, Kupperman E, Bukata S. Bisphosphonate-related atypical femoral fracture: Managing a rare but serious complication. *Cleveland Clinic Journal of Medicine*. 2018;85(11):885-893.
45. Di Fede O, Panzarella V, Mauceri R, et al. The dental management of patients at risk of medication-related osteonecrosis of the jaw: new paradigm of primary prevention. *BioMed research international*. 2018;2018.
46. Cummings SR, Martin JS, McClung MR, et al. Denosumab for prevention of fractures in postmenopausal women with osteoporosis. *New England Journal of Medicine*. 2009;361(8):756-765.
47. Bone HG, Wagman RB, Brandi ML, et al. 10 years of denosumab treatment in postmenopausal women with osteoporosis: results from the phase 3 randomised FREEDOM trial and open-label extension. *The lancet Diabetes & endocrinology*. 2017;5(7):513-523.
48. Miller PD, Bolognese MA, Lewiecki EM, et al. Effect of denosumab on bone density and turnover in postmenopausal women with low bone mass after long-term continued, discontinued, and restarting of therapy: a randomized blinded phase 2 clinical trial. *Bone*. 2008;43(2):222-229.
49. Ettinger B, Black DM, Mitlak BH, et al. Reduction of vertebral fracture risk in postmenopausal women with osteoporosis treated with raloxifene: results from a 3-year randomized clinical trial. *Jama*. 1999;282(7):637-645.
50. Cusano NE, Costa AG, Silva BC, et al. Therapy of osteoporosis in men with teriparatide. *Journal of Osteoporosis*. 2011;2011.