

Závěr

Osteoporóza je nejčastější metabolické onemocnění skeletu s dlouhodobým asymptomatickým průběhem, ale se závažnými klinickými následky. Po identifikaci pacienta s vysokým rizikem zlomeniny by mělo následovat osteologické vyšetření, které zahrnuje kromě hodnocení BMD anamnézu, fyzikální vyšetření a laboratorní vyšetření a případně další zobrazovací vyšetření, která jsou nezbytná k vyloučení sekundární etiologie osteoporózy a jiných metabolických nebo

nádorových onemocnění skeletu. Současně je vhodné vyhodnocení individuální pravděpodobnosti prodělat zlomeninu (FRAX) a identifikovat všechny další relevantní klinické faktory, které mohou ovlivnit léčbu (např. nutriční deficity). Vzhledem k rozsahu problematiky je nezbytné, aby management osteoporózy zajišťovali lékaři různých specializací ve spolupráci s pracovišti klinické osteologie. Včasná identifikace a intervence u pacientů s vysokým rizikem zlomeniny je klíčová pro snížení zátěže zlomeninami.

LITERATURA

- World Health Organisation (1994) Assessment of fracture risk and its application to screening for postmenopausal osteoporosis. Report of a WHO Study Group. World Health Organ Tech Rep Ser, 1994/01/01 edn, 1-129.
- Svedbom A, Borgström F, Hernlund E, et al. Quality of life after hip, vertebral, and distal forearm fragility fractures measured using the EQ-5D-3L, EQ-VAS, and time-trade-off: results from the ICUIROS. *Qual Life Res.* 2018;27:707-716.
- Johansson H, Siggeirsdóttir K, Harvey NC, et al. Imminent risk of fracture after fracture. *Osteoporos Int.* 2017;28:775-780.
- Tran T, Bliuc D, Hansen L, et al. Persistence of excess mortality following individual non-hip fractures: a relative survival analysis. *J Clin Endocrinol Metab.* 2018;103:3205-3214.
- Johnell O, Kanis J Epidemiology of osteoporotic fractures. *Osteoporos Int.* 2005;16(Suppl 2):S3-7.
- Warriner AH, Patkar NM, et al. Which fractures are most attributable to osteoporosis. *J Clin Epidemiol.* 2011;64:46-53.
- Oden A, McCloskey EV, Kanis JA, et al. Burden of high fracture probability worldwide: secular increases 2010-2040. *Osteoporos Int.* 2015; 26:2243-2248.
- Kanis JA, Norton N, Harvey NC, et al. SCOPE 2021: a new scorecard for osteoporosis in Europe. *Arch Osteoporos.* 2021;16:82.
- Willers C, Norton N, Harvey NC, et al. Osteoporosis in Europe: a compendium of country-specific reports. *Archives of Osteoporosis.* 2022;17:23.
- Kanis JA, Cooper C, Rizzoli R, Reginster JY. Scientific Advisory Board of the European Society for Clinical and Economic Aspects of Osteoporosis (ESCEO) and the Committees of Scientific Advisors and National Societies of the International Osteoporosis Foundation (IOF). European guidance for the diagnosis and management of osteoporosis in postmenopausal women. *Osteoporos Int.* 2019 Jan;30(1):3-44.
- Štěpán J. Osteoporóza a metabolická onemocnění skeletu. In: *Revmatologie*. Eds.: Pavelka K, Vencovský J, Horák P, Šenolt L, Mann H, Štěpán J a kol. 2. aktualizované a rozšířené vydání 2018; 600-601.
- Pepe J, Body JJ, Hadji P, et al. Osteoporosis in Premenopausal Women: A Clinical Narrative Review by the ECTS and the IOF. *J Clin Endocrinol Metab.* 2020; 1;105(8):dgaa306.
- Goetz TG, Nair N, Shiao S, et al. In premenopausal women with idiopathic osteoporosis, lower bone formation rate is associated with higher body fat and higher IGF-1. *Osteoporos Int.* 2022; 33(3):659-672.
- Lewiecki EM. Evaluating Patients for Secondary Causes of Osteoporosis. *Curr Osteoporos Rep.* 2022 Feb;20(1):1-12.
- Laurent MR, Goemaere S, Verroken C et al. Prevention and Treatment of Glucocorticoid-Induced Osteoporosis in Adults: Consensus Recommendations From the Belgian Bone Club. *Front Endocrinol (Lausanne).* 2022 Jun 9;13:908727.
- The International Society for Clinical Densitometry (ISCD) official-positions 2019; <https://www.iscd.org/official-positions/2019-iscd-official-positions-adult/> (Accessed on July 08, 2019)
- Looker AC, Wahner HW, Dunn WL, Calvo MS, Harris TB, Heyse SP, Johnston CC, Jr., Lindsay R (1998) Updated data on proximal femur bone mineral levels of US adults. *Osteoporos Int.* 8:468-489.
- Kanis JA, Gluer CC (2000) An update on the diagnosis and assessment of osteoporosis with densitometry. Committee of Scientific Advisors, International Osteoporosis Foundation. *Osteoporos Int.* 11:192-202.
- Watts NB (2004) Fundamentals and pitfalls of bone densitometry using dual-energy X-ray absorptiometry (DXA). *Osteoporos Int.* 15:847-854.
- Jha S, Chapman M, Roszko K. When low bone mineral density and fractures is not osteoporosis. *Current Osteoporosis Reports.* 2019;17(5):324-32.
- Leslie WD, Schousboe JT, Morin SN, et al. (2020) Fracture risk following high-trauma versus low-trauma fracture: a registry-based cohort study. *Osteoporos Int.* 31:1059-1067.
- Kanis J, Johnell O, Laet CD, et al (2004) A meta-analysis of previous fracture and subsequent fracture risk. *Bone.* 35:375-382.
- Johansson H, Odén A, McCloskey EV, Kanis JA. Mild morphometric vertebral fractures predict vertebral fractures but not non-vertebral fractures. *Osteoporos Int.* 2014; 25:235-241.
- Kanis JA, Johansson H, Odén A, et al. Characteristics of recurrent fractures. *Osteoporos Int.* 2018;29:1747-1757.
- Kanis JA, Johansson H, Harvey NC, et al. Adjusting conventional FRAX estimates of fracture probability according to the recency of sentinel fractures. *Osteoporos Int.* 2020;31:1817-1828.
- Starr J, Tay YKD, Shane E. Current Understanding of Epidemiology, Pathophysiology, and Management of Atypical Femur Fractures. *Curr Osteoporos Rep.* 2018 Aug;16(4):519-529.
- Fink HA, Milavetz DL, Palermo L, Nevitt MC, Cauley JA, Genant HK. What proportion of incident radiographic vertebral deformities is clinically diagnosed and vice versa? *J Bone Miner Res.* 2005;20:1216-1222.
- Melton LJ 3rd, Atkinson EJ, Cooper C, O'Fallon WM, Riggs BL. Vertebral fractures predict subsequent fractures. *Osteoporos Int.* 1999;10:214-221.
- Lindsay R, Silverman SL, Cooper C, et al. Risk of new vertebral fracture in the year following a fracture. *JAMA.* 2001;285:320-323.
- Jang HD, Kim EH, Lee JC, Choi SW, Kim K, Shin BJ. Current concepts in the management of osteoporotic vertebral fractures: a narrative review. *Asian Spine J.* 2020;14:898-909.
- Lewiecki EM. Bone densitometry and vertebral fracture assessment. *Curr Osteoporos Rep.* 2010;8:123-130.
- Johnell O, Kanis JA, Oden A, et al. Predictive value of BMD for hip and other fractures. *J Bone Miner Res.* 2005;20:1185-1194.
- Kanis JA, Johnell O, Odén A, Dawson A, De Laet C, Jonsson B. Ten-year probabilities of osteoporotic fractures according to BMD and diagnostic thresholds. *Osteoporos Int.* 2001;12:989-995.
- Kanis JA, Oden A, Johnell O, et al. The use of clinical risk factors enhances the performance of BMD in the prediction of hip and osteoporotic fractures in men and women. *Osteoporos Int.* 2007;18(8):1033-1046.
- Leslie WD, Lix LM, Johansson H, et al. Spine-hip discordance and fracture risk assessment: a physician-friendly FRAX enhancement. *Osteoporos Int.* 2011;22:839-847.
- Kanis JA, Johansson H, Oden A, McCloskey EV. Guidance for the adjustment of FRAX according to the dose of glucocorticoids. *Osteoporos Int.* 2011;22(3):809-16.
- Masud T, Binkley N, Boonen S, Hannan MT. Official Positions for FRAX® clinical regarding falls and frailty: can falls and frailty be used in FRAX®? From Joint Official Positions Development Conference of the International Society for Clinical Densitometry and International Osteoporosis Foundation on FRAX®. *J Clin Densitom.* 2011;14:194-204.
- Leslie WD, Johansson H, McCloskey EV, Harvey NC, Kanis JA, Hans D. Comparison of Methods for Improving Fracture Risk Assessment in Diabetes: The Manitoba BMD Registry. *J Bone Mineral Res.* 2018;33:1923-1930.
- Kanis JA, Johansson H, Harvey NC, et al. Adjusting conventional FRAX estimates of fracture probability according to the recency of sentinel fractures. *Osteoporos Int.* 2020;31:1817-182.
- Gregson CL, Armstrong DJ, Bowden J, et al. UK clinical guideline for the prevention and treatment of osteoporosis. *Arch Osteoporos.* 2022 Apr 5;17(1):58.
- Laet C, Kanis J, Oden A, et al. Body mass index as a predictor of fracture risk: a meta-analysis. *Osteoporos Int.* 2005;16:1330-1338.
- Kanis JA, Johansson H, Oden A, et al. A family history of fracture and fracture risk: a meta-analysis. *Bone* 2004;35:1029-1037.
- Kanis JA, Johansson H, Oden A, et al. A meta-analysis of prior corticosteroid use and fracture risk. *J Bone Mineral Research.* 2004;19:893-899.
- Kanis JA, Johnell O, Oden A, et al. Smoking and fracture risk: a meta-analysis. *Osteoporos Int* 2005; 16:155-162.
- Kanis JA, Johansson H, Johnell O, et al. Alcohol intake as a risk factor for fracture. *Osteoporos Int.* 2005;16:737-742.
- Vilaca T, Schini M, Harnan S, et al. The risk of hip and non-vertebral fractures in type 1 and type 2 diabetes: a systematic review and meta-analysis update. *Bone* 2020; 137:115457.
- de Laet C, Kanis JA, Oden A, et al. Body mass index as a predictor of fracture risk: a meta-analysis. *Osteoporos Int.* 2005;16(11):1330-1338.
- Vilaca T, Schini M, Harnan S, et al. The risk of hip and non-vertebral fractures in type 1 and type 2 diabetes: a systematic review and meta-analysis update. *Bone.* 2020;137:115457.