

# 11. BÖLÜM

## KARDİYOLOG GÖZÜYLE DİYABETİK RETİNOPATİYE YAKLAŞIM

Selda MURAT<sup>1</sup>

### GİRİŞ

Diyabetik retinopati (DR), diyabetin sık görülen bir mikrovasküler komplikasyonudur. Diyabetik retinopati gelişimini önleyebilmek için öncelikli olarak risk faktörlerini değerlendirmek önemlidir. Son yıllarda yapılan çalışmalar DR varlığının inme, koroner kalp hastalığı (KKH), miyokard infarktüsü gibi bir dizi kardiyovasküler hastalık (KVH) ve KVH nedenli mortalite ile ilişkili olduğunu göstermiştir. Cheng ve arkadaşları bir, iki, üç veya dört kardiyometabolik risk faktörü ile ilişkili diyabetik retinopati prevalansını sırasıyla %16.0, %17.6, %21.3 ve %25.1 olduğunu bildirmişlerdir (P=0.001). Bu bölümde kardiyoloji pratiğinde sık görülen hipertansiyon (HT), koroner arter hastalığı (KAH) ve dislipidemi ile DR arasındaki ilişkiden bahsedilecektir.

### HİPERTANSİYON VE DİYABETİK RETİNOPATİ

Diyabetik retinopati gelişimi için en önde gelen risk faktörleri uzun süreli diyabet, hiperglisemi ve HT'dir. Zayıf glisemik kontrolün yanı sıra, kan basıncının (KB), DR için önemli bir risk faktörü olduğu bilinmektedir. Hipertansiyonun, DR gelişimi ile pozitif bir ilişkisi olduğu gösterilmiştir. Bununla birlikte, DR'nin başlangıcı ve ciddiyetinde, sadece hiperglisemi ve HT ile açıklanamayacak önemli farklılıklar vardır. Yapılan bazı çalışmalar, kan şekeri ve kan basıncının kontrol altında olduğu hastalarda bile ileri evre DR geliştiğini göstermiştir. Bu durum diğer eşlik eden risk faktörlerinin de DR gelişiminde rolü olduğunu düşündürmektedir.

<sup>1</sup> Dr. Öğretim Üyesi, Eskişehir Osmangazi Üniversitesi Kardiyoloji Anabilim Dalı, selda.eraslan@hotmail.com

**KAYNAKLAR**

1. Yau JW, Rogers SL, Kawasaki R, et al. Meta-analysis for Eye Disease (META-EYE) Study Group. Global prevalence and major risk factors of diabetic retinopathy. *Diabetes Care*. 2012;35:556-564.
2. Xie J, Ikram MK, Cotch MF, et al. (2017). Association of diabetic macular edema and proliferative diabetic retinopathy with cardiovascular disease: a systematic review and meta-analysis. *JAMA ophthalmology*. 2017;135:586-593.
3. Cheung N, Wong TY. Diabetic retinopathy and systemic vascular complications. *Prog Retin Eye Res*. 2008;27:161-176.
4. Cheng Y, Zhang H, Chen R, et al. Cardiometabolic risk profiles associated with chronic complications in overweight and obese type 2 diabetes patients in South China. *PLoS One* 2014;9:e101289.
5. Yin L, Zhang D, Ren Q, et al. Prevalence and risk factors of diabetic retinopathy in diabetic patients: A community based cross-sectional study. *Medicine (Baltimore)*. 2020;99(9):e19236.
6. Wong TY, Cheung CM, Larsen M, Sharma S, Simó R. Diabetic retinopathy. *Nat Rev Dis Primers*. 2016;17:16012.
7. De Block CE, De Leeuw IH, Van Gaal LF. Impact of overweight on chronic microvascular complications in type 1 diabetic patients. *Diabetes Care*. 2005;28:1649-55.
8. Zhang X, Saaddine JB, Chou CF, et al. Prevalence of diabetic retinopathy in the United States, 2005-2008. *JAMA*. 2010;304:649-56.
9. Raum P, Lamparter J, Ponto KA, et al. Prevalence and cardiovascular associations of diabetic retinopathy and maculopathy: results from the Gutenberg Health Study. *PLoS One* 2015;10:e0127188.
10. Zhang L, Krzentowski G, Albert A, et al. Risk of developing retinopathy in Diabetes Control and Complications Trial type 1 diabetic patients with good or poor metabolic control. *Diabetes Care*. 2001;24:1275-1279.
11. Varma R, Macias GL, Torres M, et al. Biologic risk factors associated with diabetic retinopathy: the Los Angeles Latino Eye Study. *Ophthalmology*. 2007;114:1332-1340.
12. van Leiden HA, Dekker JM, Moll AC, et al. Risk factors for incident retinopathy in a diabetic and nondiabetic population: the Hoorn study. *Arch Ophthalmol*. 2003;121:245-251.
13. Liu L, Quang ND, Banu R, et al. Hypertension, blood pressure control and diabetic retinopathy in a large population-based study. *PLoS ONE*. 2020;15: e0229665.
14. UK Prospective Diabetes Study (UKPDS) Group. Intensive blood-glucose control with sulphonylureas or insulin compared with conventional treatment and risk of complications in patients with type 2 diabetes (UKPDS 33). *Lancet*. 1998;352:837-853.
15. UK Prospective Diabetes Study Group. Tight blood pressure control and risk of macrovascular and microvascular complications in type 2 diabetes: UKPDS 38. *BMJ*. 1998;317:703-713.
16. Williams B, Mancia G, Spiering W, et al. "2018 ESC/ESH Guidelines for the management of arterial hypertension: The Task Force for the management of arterial hypertension of the European Society of Cardiology (ESC) and the European Society of Hypertension (ESH)." *European heart journal*. 2018;39:3021-3104.
17. Tripathi, K. EUCLID study. *Lancet*. 1997;350:1102-1103.
18. Chaturvedi N, Porta M, Klein R, et al. Effect of candesartan on prevention (DIRECT-Prevent 1) and progression (DIRECT-Protect 1) of retinopathy in type 1 diabetes: randomised, placebo-controlled trials. *Lancet*. 2008;372:1394-1402.
19. Sjolie AK, Klein R, Porta M, et al. Effect of candesartan on progression and regression of retinopathy in type 2 diabetes (DIRECT-Protect 2): a randomised placebo-controlled trial. *Lancet*. 2008;372:1385-1393.
20. Mauer M, Zinman B, Gardiner R, et al. Renal and retinal effects of enalapril and losartan in type 1 diabetes. *N. Engl. J. Med*. 2009;361:40-51.

21. World Health Organization (WHO). Global atlas on cardiovascular disease prevention and control. WHO, Geneva, Switzerland, 2011.
22. Almdal T, Scharling H, Jensen JS, et al. The independent effect of type 2 diabetes mellitus on ischemic heart disease, stroke, and death: a population-based study of 13,000 men and women with 20 years of follow-up. *Arch Intern Med.* 2004;164:1422-1426
23. Cosentino F, Grant PJ, Aboyans V, et al. 2019 ESC Guidelines on diabetes, pre-diabetes, and cardiovascular diseases developed in collaboration with the EASD." *European Heart Journal.* 2020;41:255-323.
24. Guo VY, Cao B, Wu X, et al. "Prospective association between diabetic retinopathy and cardiovascular disease—a systematic review and meta-analysis of cohort studies." *Journal of Stroke and Cerebrovascular Diseases.* 2016;25:1688-1695.
25. Cheung N, Wang JJ, Klein R, et al. Diabetic retinopathy and the risk of coronary heart disease: the Atherosclerosis risk in Communities Study. *Diabetes Care.* 2007;30:1742-1746.
26. Shoeibi N, Bonakdaran S. Is there any correlation between diabetic retinopathy and risk of cardiovascular disease? *Curr Diabetes Rev.* 2017,13:81-86.
27. Piepoli MF, Hoes AW, Agewall S, et al. 2016 European Guidelines on cardiovascular disease prevention in clinical practice: the Sixth Joint Task Force of the European Society of Cardiology and Other Societies on Cardiovascular Disease Prevention in Clinical Practice (constituted by representatives of 10 societies and by invited experts) developed with the special contribution of the European Association for Cardiovascular Prevention & Rehabilitation (EACPR). *Eur Heart J.* 2016;37:2315-2381.
28. American Diabetes Association, et al. 10. Cardiovascular disease and risk management: standards of medical care in diabetes-2019. *Diabetes Care.* 2019; 42(Suppl 1):S103-S123.
29. Zhu XR, Zhang YP, Bai L, et al. Prediction of risk of diabetic retinopathy for all-cause mortality, stroke and heart failure, *Medicine.* 2017;96:e5894.
30. Zhen Z, Chen Y, Shih K, et al. Altered myocardial response in patients with diabetic retinopathy: an exercise echocardiography study. *Cardiovasc Diabetol.* 2015;14:123 .
31. Deshmukh PP, Singh MM, Deshpande MA, et al. Clinical and angiographic profile of very young adults presenting with first acute myocardial infarction: Data from a tertiary care center in Central India. *Indian Heart Journal.* 2019;71:418-421.
32. Mach F, Baigent C, Catapano AL, et al. 2019 ESC/EAS Guidelines for the management of dyslipidaemias: lipid modification to reduce cardiovascular risk: The Task Force for the management of dyslipidaemias of the European Society of Cardiology (ESC) and European Atherosclerosis Society (EAS). *European heart journal.* 2020;41:111-188.
33. Keiding NR, Mann GV, Root HF, et al. Serum lipoproteins and cholesterol levels in normal subjects and in young patients with diabetes in relation to vascular complications. *Diabetes.* 1952;1:434-40.
34. Chew EY, Klein ML, Ferris FR, et al. Association of elevated serum lipid levels with retinal hard exudate in diabetic retinopathy. *Early Treatment Diabetic Retinopathy Study (ETDRS) Report 22.* *Arch Ophthalmol.* 1996;114:1079-1084.
35. Rema M, Srivastava BK, Anitha B, et al. Association of serum lipids with diabetic retinopathy in urban South Indians—the Chennai Urban Rural Epidemiology Study (CURES) Eye Study-2. *Diabet Med* 2006;23:1029-1036.
36. Tapp RJ, Shaw JE, Harper CA, et al. The prevalence of and factors associated with diabetic retinopathy in the Australian population. *Diabetes Care.* 2003;26:1731-1737.
37. Wong TY, Klein R, Islam FM, et al. Diabetic retinopathy in a multiethnic cohort in the United States. *Am J Ophthalmol.* 2006;141:446-455.
38. Wong TY, Cheung N, Tay WT, et al. Prevalence and risk factors for diabetic retinopathy: the Singapore Malay Eye Study. *Ophthalmology.* 2008;115:1869-1875.
39. Zhou Y, Wang C, Shi K, et al. Relationship between dyslipidemia and diabetic retinopathy: a systematic review and meta-analysis. *Medicine.* 2018;97(36).