

BÖLÜM 22

BİFURKASYON LEZYONLARINDA KOMPLİKASYON YÖNETİMİ

Tuğba AKTEMUR

Alkım ATEŞLİ YAZICI

1. İşlem Sonrası Akım Kaybı Nedenleri ve Yönetimi

Koroner No-Reflow Fenomeni

Ezikardial koroner arterlerin revaskülarizasyonu sonrası, lökosit ve inflamasyon ile ilişkili mediatörlerin katkısı ile lokal ya da yaygın kapiller ödem ve artmış arterial endotelyal disfonksiyon durumu olarak tanımlanabilir (1). Başlangıçta olan iskemik hasar, reperfüzyon hasarı ve ayrıca perkütan koroner girişimlerle birlikte, balonlama ve stent implantasyonu sonrası distal koroner yatağa yoğun bir tromboemboli gerçekleşebilmektedir. Bu da koroner mikrosirkülasyonu olumsuz etkilemektedir (2). En sık görüldüğü hasta grubu ise akut koroner sendromdur (1). Artmış aterosklerotik yükle sahip hastalar koroner no-reflow açısından riskli olmakta birlikte düşük aterosklerotik yükle sahip hastalarda dahi balon dilatasyonu sonrası koro-

ner no-reflow fenomeni gelişebilmektedir. Tanıda altın standart olarak anjiyografi, miyokard kontrast ekokardiyografi veya magnetik rezonans görüntüleme kullanılabilir (3). Başarılı koroner girişimden sonra residüel koroner stenoz, trombus formasyonu ya da koroner diseksiyon varlığı olmaksızın, koroner akımın thrombolysis in myocardial infarction (TIMI) 3'ten daha az olması koroner no-reflow olarak tanımlanmaktadır (4).

Yaklaşım olarak, bu durumu önleyebilmek için akut koroner sendrom hastalarında kapı-balon zamanının kısaltılması, hemodinamik stabilizasyon ve elektrolit, kan glukoz dengesinin sağlanması önemlidir (1). Perkütan koroner girişim esnasında hem ana dal hem yan dal uygun çapta ve uzunlukta stent seçimi, trombus yükü fazla olan hastalarda distal koruma araçlarının kullanılması ile çeşitli yaynlarda korunma açısından başarı gösterilmiştir. Aynı zamanda trombüüs yükü olan hastalarda glikoprotein (Gp) IIb-IIIa inhibitörlerinin

Kaynaklar

1. Rezkalla SH, Kloner RA. Coronary no-reflow phenomenon: from the experimental laboratory to the cardiac catheterization laboratory. *Catheter Cardiovasc Interv.* 2008; 72:950-7.
2. Kaur G, Bagdasaryan P, Natarajan B, et al. Pathophysiology, Diagnosis, and Management of Coronary No-Reflow Phenomenon. *Int J Angiol.* 2021; 30:15-21.
3. Gupta S, Gupta MM. No reflow phenomenon in percutaneous coronary interventions in ST-segment elevation myocardial infarction. *Indian Heart J.* 2016; 68:539-51.
4. Caiazzo G, Musci RL, Frediani L, et al. State of the Art: No-Reflow Phenomenon. *Cardiol Clin.* 2020; 38:563-573.
5. Kelly RV, Cohen MG, Stouffer GA. Incidence and management of no-reflow following percutaneous coronary interventions. *Am J Med Sci.* 2005; 329:78-85.
6. Giannini F, Candilio L, Mitomo S, et al. A Practical Approach to the Management of Complications During Percutaneous Coronary Intervention. *JACC Cardiovasc Interv.* 2018; 11:1797-1810.
7. Huber MS, Mooney JF, Madison J, Mooney MR. Use of a morphologic classification to predict clinical outcome after dissection from coronary angioplasty. *Am J Cardiol* 1991; 68:467-71.
8. Klein L. Coronary complications of percutaneous coronary interventions: a practical approach to the management of abrupt closure. *Catheter Cardiovasc Interv* 2005;64:395-401.
9. de Feyter PJ, de Jaegere PPT, Murphy ES, Serruys PW. Abrupt coronary artery occlusion during percutaneous transluminal coronary angioplasty. *Am Heart J* 1992;123:1633-42.
10. Al-Mukhaini M, Panduranga P, Sulaiman K, et al. Coronary perforation and covered stents: an update and review. *Heart Views* 2011;12:63-70.
11. Kinnaird T, Kwok CS, Kontopantelis E, et al. Incidence, determinants and outcomes of coronary perforation during percutaneous coronary intervention in the United Kingdom between 2006 and 2013. An analysis of 527121 cases from the British Cardiovascular Intervention Society Database. *Circ Cardiovasc Interv* 2016; 9:e003449.
12. Lemmert ME, van Bommel RJ, Diletti R, et al. Clinical Characteristics and Management of Coronary Artery Perforations: A Single-Center 11-Year Experience and Practical Overview. *Journal of the American Heart Association.* 2017;6:e007049
13. Shimony A, Joseph L, Mottillo S, Eisenberg MJ. Coronary artery perforation during percutaneous coronary intervention: a systematic review and meta-analysis. *Can J Cardiol* 2011;27:843-50.
14. Shirakabe A, Takano H, Nakamura S, et al. Coronary perforation during percutaneous coronary intervention. *Int Heart J* 2007;48:1-9.
15. Gunning MG, Williams IL, Jewitt DE, et al. Coronary artery perforation during percutaneous intervention: incidence and outcome. *Heart* 2002; 88:495-8.
16. Maehara A, Mintz GS, Bui AB, et al. Incidence, morphology, angiographic findings, and outcomes of intramural hematomas after percutaneous coronary interventions: an intravascular ultrasound study. *Circulation.* 2002; 105:2037-42.
17. Antonsen L, Thayssen P, Jensen LO. Large coronary intramural hematomas: a case series and focused literature review. *Cardiovasc Revasc Med.* 2015; 16:116-23.
18. Moses JW, Leon MB, Popma JJ, et al. Sirolimus-eluting stents versus standard stents in patients with stenosis in a native coronary artery. *N Engl J Med* 2003; 349:1315-1323.
19. Lemesle G, Delhaye C, Bonello L, et al. Stent thrombosis in 2008: definition, predictors, prognosis and treatment. *Arch Cardiovasc Dis.* 2008; 101:769-77.
20. Eisenstein EL, Anstrom KJ, Kong DF, et al. Clopidogrel use and long-term clinical outcomes after drug-eluting stent implantation. *JAMA* 2007; 297:159-168.
21. Iván J, Núñez-Gil, Daniel Bautista, Enrico Cerrato, et al. Incidence, Management, and Immediate- and Long-Term Outcomes After Iatrogenic Aortic Dissection During Diagnostic or Interventional Coronary Procedures. *Circulation.* 2015;131:2114-2119.
22. Boukhris M, Tomasello SD, Marzà F, Azzarelli S, Galassi AR. Iatrogenic aortic dissection complicating percutaneous coronary intervention for chronic total occlusion. *Can J Cardiol.* 2015; 31:320-7.
23. Jia-Chen Li , Xin-Liang Guan , Ming Gong , Hong-Jia Zhang. Iatrogenic aortic dissection during percutaneous coronary intervention: A case report and review of the literature. *J Int Med Res.* 2018; 46:526-532.
24. Lunardi M, Louvard Y, Lefèvre T, et al. Definitions and Standardized Endpoints for Treatment of Coronary Bifurcations. *EuroIntervention.* 2022 May 18:EIJ-E-22-00018. doi: 10.4244/EIJ-E-22-00018. Epub ahead of print. PMID: 35583108
25. Dou K, Zhang D, Xu B, et al. An angiographic tool for risk prediction of side branch occlusion in coronary bifurcation intervention: the RESOLVE score system (Risk prEdiction of Side branch OccLusion in coronary bifurcation interVEntion). *JACC Cardiovasc Interv.* 2015; 8:39-46.
26. Hildick-Smith D, Arunothayaraj S, Stankovic G, Chen SL. Percutaneous coronary intervention of bifurcation lesions. *EuroIntervention.* 2022; 18:e273-e291.
27. Albiero R, Burzotta F, Lassen JF, et al. Treatment of coronary bifurcation lesions, part I: implanting the first stent in the provisional pathway. The 16th expert consensus document of the European Bifurcation Club. *EuroIntervention.* 2022; 18:e362-e376.
28. Lassen JF, Albiero R, Johnson TW, et al. Treatment of coronary bifurcation lesions, part II: implanting two stents. The 16th expert consensus document of the European Bifurcation Club. *EuroIntervention.* 2022; 18:457-470.

- 29-Mori H, Torii S, Harari E, et al. Pathological mechanisms of left main stent failure. *Int J Cardiol.* 2018; 263:9-16.
30. Song YB, Hahn JY, Choi SH, et al. Sirolimus- versus paclitaxel-eluting stents for the treatment of coronary bifurcations results: from the COBIS (Coronary Bifurcation Stenting) Registry. *J Am Coll Cardiol.* 2010; 55:1743-50.
31. Zhang D, Xu B, Yin D, et al. How bifurcation angle impacts the fate of side branch after main vessel stenting: a retrospective analysis of 1,200 consecutive bifurcation lesions in a single center. *Catheter Cardiovasc Interv.* 2015; 85:706-15.
32. Lowe HC, Oesterle SN, Khachigian LM. Coronary in-stent restenosis: Current status and future strategies *J Am Coll Cardiol.* 2002; 39:183-193
33. De Filippo O, Kang J, Bruno F, et al. Benefit of Extended Dual Antiplatelet Therapy Duration in Acute Coronary Syndrome Patients Treated with Drug Eluting Stents for Coronary Bifurcation Lesions (from the BIFURCAT Registry). *Am J Cardiol.* 2021;156:16-23.
34. Hermiller JB. Bifurcation intervention: keep it simple. *J Invasive Cardiol.* 2006;18:43-4.
35. Ojeda S, Pan M, Mazuelos F, et al. Use of the venture wire-control catheter for accessing side branches during provisional stenting: an option for bifurcations with an unfavorable anatomy. *Rev Esp Cardiol.* 2010; 63:1487-91
36. Watanabe S, Saito N, Bao B, et al. Microcatheter-facilitated reverse wire technique for side branch wiring in bifurcated vessels: an in vitro evaluation. *EuroIntervention.* 2013; 9:870-7.
37. Chen SL, Zhang JJ, Han Y, et al. Double kissing crush versus provisional stenting for left main distal bifurcation lesions: DKCRUSH-V randomized trial. *J Am Coll Cardiol.* 2017; 70:2605-2617.
38. Khan M, Schmidt D, Bajwa T, et al. Coronary air embolism: incidence, severity, and suggested approaches to treatment. *Cathet Cardiovasc Diagn.* 1995;36:313-8.
39. Dib J, Boyle AJ, Chan M, et al. Coronary air embolism: a case report and review of literature. *Catheter Cardiovasc Interv.* 2006; 68:897-900
40. Uppal S, DeCicco AE, Intini A, Josephson AR. Rapid Desensitization to Overcome Contrast Allergy Prior to Urgent Coronary Angiography. *Int Heart J.* 2018; 59:622-625.
41. Brockow K, Christiansen C, Kanny G, et al. Management of hypersensitivity reactions to iodinated contrast media. *Allergy.* 2005; 60:150-158.