

# Bölüm

## 16

# YOĞUN BAKIMDA KALP YETMEZLİĞİ

Bedih BALKAN<sup>1</sup>

### GİRİŞ

Kalp yetmezliği (KY); kalbin işlevsel olarak normal olmadığı durumlarda, istirahat ya da hareket esnasında azalmış kardiyak output ve artmış intrakardiyak basıncın sonucunda tipik belirtiler (nefes daralması, ayak bileği şişlik ile halsizlik) bunlarla beraber (juguler venöz basınç yükselme, akciğerde dinlemekle raller ve periferik ödem) karakterize bir kliniktir. Tanı sadece laboratuvar veya radyolojik testlerle değil, detaylı klinik değerlendirmenin korelasyonu ile yapılır (1).

**Terminoloji:** Sol ventrikül ejeksiyon fraksiyonuna (LVEF), semptomların ciddiyeti ve oluş zamanına göre gruptara ayrılmış olup gruplar aşağıdaki şekilde güncellenmiştir (Tablo 1).

- 1.HFrEF (Azalmış EF'li KY)
- 2.HfmrEF (Sınırlı EF'li KY)
- 3.HfpEF (Korunmuş EF'li KY)

Sol kalp yetmezliği 3 tipte olabilir. EF %40 in altına düşenlerde sistolik KY, EF %50 üstü ama yine de KY olan tipine diyastolik KY ve EF%40-

50 arası olanlarda orta zonda KY denilmektedir. Sistolik kalp yetmezliğinin en sık sebebi geçirilmiş kalp krizidir. Diğer nedenler arasında myokardit ve kardiyomiyopatileri sayabiliriz. Diyastolik KY ise hipertansiyon ya da aort stenozu gibi sebeplerle oluşur. Her iki tip yetmezlikte de aorta atılan kanda azalma (kardiyak debide düşme) ve sol ventrikül diyastol sonu basıncında artış vardır ve artan sol ventrikül içi basınç, sol atriyuma ve oradan da akciğere yansır. Bu durum pulmoner kapiller wedge (PCW) basıncını arttırır ve artan bu basınç da (22 mmHg üstü) akciğerde önce interstisyal ödeme, daha çok artarsa (30-40 mmHg üstü) alveoler ödeme ve ortopneik akciğer ödemi-ne yol açar.

Belirtilerin şiddetine göre New York Heart Association (NYHA)'ın işlevsel sınıflaması yapılmış, NYHA Sınıflı Belirtiler (New York Kalp Akademisi, NYHA) son olarak 1994 yılında rapor edilmiştir. NYHA sınıflaması güçlü bir прогноз belirteci ve risk belirleyicisidir (Tablo- 2).

Tablo -1

KY Tipi	HfrEF	HfmrEF	HfpEF
Kriterler	1	Belirti+Bulgular	Belirti+Bulgular
Kriterler	2	LVEF<%40	LVEF>%50
Kriterler	3		1. Yüksek NP düzeyi 2.Ek kriterlerden en az biri a) Alta yatan yapısal kalp hastalığı b) Diyastolik işlev bozukluğu 1. Yüksek NP düzeyi 2.Ek kriterlerden en az biri a) Alta yatan yapısal kalp hastalığı b) Diyastolik işlev bozukluğu

<sup>1</sup> Uzm. Dr. Mehmet Akif Ersoy Göğüs Kalp Damar Cerrahi Hastanesi Yoğun Bakım Ünitesi, drbedihbalkan21@gmail.com  
ORCID iD: 0000-0003-3510-6991

Sağ ventrikülün ardyükün azaltılması, ön yükün düzenlenmesi ve kontraktilitenin artırılması klinik yönetimin temelidir. Hiperkarbiden kaçınılmalı ve gerekirse mekanik ventilatör desteği verilmelidir.

## KAYNAKLAR:

1. Ponikowski P, Voors AA, Anker SD, Bueno H, Cleland JG, Coats AJ, et al. 2016 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure: The Task Force for the diagnosis and treatment of acute and chronic heart failure of the European Society of Cardiology (ESC) Developed with the special contribution of the Heart Failure Association (HFA) of the ESC. Eur Heart J 2016;37:2129–200. Crossref.
2. Stein BC, Levi RI. Natriuretic peptides: Physiology, therapeutic potential, and risk stratification in ischemic heart disease. Am Heart J 1998;135:914-23.
3. McMurray JJ, Adamopoulos S, Anker SD, Auricchio A, Bohm M, Dickstein K et al. ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure 2012: The Task Force for the Diagnosis and Treatment of Acute and Chronic Heart Failure 2012 of the European Society of Cardiology. Developed in collaboration with the Heart Failure Association (HFA) of the ESC. Eur Heart J 2012;33:1787-847.
4. Von Haehling S, Jankowska EA, Morgenthaler NG, Vasanelli C, Zanolla L, Rozentryt P et al. Comparison of midregional pro-atrial natriuretic peptide with N-terminal pro-B-type natriuretic peptide in predicting survival in patients with chronic heart failure. J Am Coll Cardiol. 2007;50:1973-80.
5. Farmakis D, Parissis J, Filippatos G. Acute heart failure: epidemiology, classification and pathophysiology. The ESC textbook of intensive and acute cardiovascular care. Oxford University Press, 2nd ed. 2015:459-469.
6. Killip T 3rd, Kimball JT. Treatment of myocardial infarction in a coronary care unit. A two year experience with 250 patients. Am J Cardiol 1967;20(4):457-64.
7. Stevenson LW. Design of therapy for advanced heart failure. Eur J Heart Fail 2005;7(3).
8. Adalet K. Akut kalp yetersizliği ve akciğer odemi. Klinik kardiyoloji tanı ve tedavi. İstanbul Tip kitabı, 2013:657-67. 9. Kelder JC, Cowie MR, McDonagh TA, et al. Quantifying the added value of BNP in suspected heart failure in general practice: an individual patient data meta-analysis. Heart 2011;97(12):95963.
10. Gupta DK, Wang TJ. Natriuretic Peptides and Cardio metabolic Health. Circ J 2015;79(8):1647-55.
11. Felker GM, Mentz RJ, Teerlink JR, et al. Serial high sensitivity cardiac troponin T measurement in acute heart failure: insights from the RELAX-AHF study. Eur J Heart Fail 2015;17(12):1262-70.
12. Roffi M, Patrono C, Collet JP, et al. Management of Acute Coronary Syndromes in Patients Presenting without Persistent ST-Segment Elevation of the European Society of Cardiology. 2015 ESC Guidelines for the management of acute coronary syndromes in patients presenting without persistent ST-segment elevation: Task Force for the Management of Acute Coronary Syndromes in Patients Presenting without Persistent ST-Segment Elevation of the European Society of Cardiology (ESC). Eur Heart J 2016;37(3):267-315.
13. Mancia G, Fagard R, Narkiewicz K, et al. 2013 ESH/ESC guidelines for the management of arterial hypertension: the Task Force for the Management of Arterial Hypertension of the European Society of Hypertension (ESH) and of the European Society of Cardiology (ESC). Eur Heart J 2013;34(28):2159-219.
14. Priori SG, Blomström-Lundqvist C, Mazzanti A, et al. 2015ESC Guidelines for the management of patients with ventricular arrhythmias and the prevention of sudden cardiac death: The Task Force for the Management of Patients with Ventricular Arrhythmias and the Prevention of Sudden Cardiac Death of the European Society of Cardiology (ESC). Endorsed by: Association for European Paediatric and Congenital Cardiology (AEPC). Eur Heart J 2015;36(41):2793-867
15. Konstantinides SV, Torbicki A, Agnelli G, et al. Task Force for the Diagnosis and Management of Acute Pulmonary Embolism of the European Society of Cardiology (ESC). 2014 ESC guidelines on the diagnosis and management of acute pulmonary embolism. Eur Heart J 2014;35(43):3033-69.
16. Park JH, Balmain S, Berry C, Morton JJ, McMurray JJ. Potentially detrimental cardiovascular effects of oxygen inpatients with chronic left ventricular systolic dysfunction. Heart 2010;96(7):533-8.
17. Mebazaa A, Yilmaz MB, Levy P, et al. Recommendations on pre-hospital & early hospital management of acute heart failure: a consensus paper from the Heart Failure Association of the European Society of Cardiology, the European Society of Emergency Medicine and the Society of Academic Emergency Medicine. Eur J Heart Fail 2015;17(6):544-58.
18. McMurray JJ, Packer M, Desai AS, Gong J, Lefkowitz MP, Rizkala AR, et al. Angiotensin-neprilysin inhibition versus enalapril in heart failure. N Engl J Med 2014;371:993-1004.
19. Mentz RJ, Kjeldsen K, Rossi GP, et al. Decongestion in acute heart failure. Eur J Heart Fail 2014;16(5):471-82.
20. Elkayam U, Akhter MW, Singh H, Khan S, Usman A. Comparison of effects on left ventricular filling pressure of intravenous nesiritide and high-dose nitroglycerin in patients with decompensated heart failure. Am J Cardiol 2004;93(2):237-40.
21. O'Connor CM, Starling RC, Hernandez AF, et al. Effect of nesiritide in patients with acute decompensated heart failure. N Engl J Med 2011;365(1):32-43.
22. Farmakis D, Parissis J, Filippatos G. Acute heart failure: epidemiology, classification and pathophysiology. The ESC textbook of intensive and acute cardiovascular care. Oxford University Press, 2nd ed. 2015:459-469.
23. Chen HH, Anstrom KJ, Givertz MM, et al; NHLBI Heart Failure Clinical Research Network. Low-dose dopamine or low-dose nesiritide in acute heart failure with renal dysfunction: the ROSE acute heart failure randomized trial. JAMA 2013;310(23):2533-43.
24. Francis GS, Bartos JA, Adatya S. Inotropes. J Am Coll Cardiol 2014;63(20):2069-78.

25. Whalen K et al. The Role of Sodium-Glucose Co-Transporter 2 Inhibitors in the Treatment of Type 2 Diabetes, the new england journal of medicine 2015, 37(6): 1150-1166
26. Bart BA, Goldsmith SR, Lee KL, et al; Heart Failure ClinicalResearch Network. Ultrafiltration in decompensated heartfailure with cardiorenal syndrome. N Engl J Med 2012;367(24):2296-304.
27. Mebazaa A, Tolppanen H, Mueller CLassus J, Disomma S, Baksyte G, et al. Acute heart failure and cardiogenic shock: a multidisciplinary practical guidance. Intensive Care Med 2016;42(2):147-63
28. Mehra MR, Park MH, Landzburg MJ et al Right heart failure:toward a common language .Pulm circ 2013;3:963-67
29. Woods J, Nishikimi T, Okano Y, et al plazma brain natriuretic peptid levels increase in proportion to the extent of rihtg ventrikul dysfunction in pulmonary hypertension J.Am COLL Cardiol 1998;31:202-8
30. Rudski LG, Lai WW, Afilalo J, Hua L, Handschumacher MD, Chandrasekaran K, et al. Guidelines for the echocardiographic assessment of the right heart in adults: a report from the American Society of Echocardiography endorsed by the European Association of Echocardiography, a registered branch of the European Society of Cardiology, and the Canadian Society of Echocardiography. J Am Soc Echocardiogr 2010;23:685-713; quiz 786-8.
31. Poor HD, Ventetuole CE ,Pulmonary hypertension in the intensive careunit,Prog Cardiovasculer dis.2012;55:187- 98
32. DePerrot M, Granton JT, McRae K, et al impact o extracoporeal life support on outcome in paients with idiopathic pulmonary arterial hypertension awaiting lung transplantation 2011;30:997-1002. 33.Konstam M, Kieran M, Bernstein D, et al. Evaluation and Management of Right-Sided Heart Failure: A Scientific Statement From the American Heart Association. Circulation. 2018;137(20):e578-e622.
34. Repesse X, Charron C, Vieillard-Baron A Right ventricular failulre in acute lung injury and acute respiratory distress syndrome .Minerva Anestesiol 2012;78:941-8
35. Costanzo MR, Mills RM, Wynne J. Characteristics of "Stage D"heart failure: insights from the Acute Decompensated Heart FailureNational Registry Longitudinal Module (ADHERE LM). Am Heart J 2008;155:339-47.
36. Maggioni AP, Dahlström U, Filippatos G, Chioncel O, Crespo Leiro M, Drozdz J, et al.; Heart Failure Association of the European Society of Cardiology (HFA). EURObservational Research Programme:regional differences and 1-year follow-up results of the Heart FailurePilot Survey (ESC-HF Pilot). Eur J Heart Fail 2013;15:808-17.
37. Lee LM, Karon JM, Selik R, Neal JJ, Fleming PL. Survival after AIDS diagnosis in adolescents and adults during the treatment era,United States, 1984-1997. JAMA 2001;285:1308-15..