

Bölüm

11

ARİTMİLİ HASTALARDA EGZERSİZ

Cansu COŞGUN¹

Muharrem Said COŞGUN²

GENEL BAKIŞ

Bilinen aritmileri olan veya potansiyel olarak aritmojenik bir rahatsızlığı olan kişiler spor aktivitesine katılmak istediklerinde üç temel soruna açıklık getirmek gerekmektedir:

- Hayatı tehdit eden aritmi riski artmış mı?
- Spor sırasında aritmilere bağlı semptomlar nasıl kontrol edilir?
- Sporun aritmojenik durumun doğal ilerlemesi üzerindeki etkisi nedir?

Spor ve aritmiler arasındaki ilişkiye dair genel görüş altta yatan veya önceden var olan bir durum bağlamında çeşitli aritmiler için zemin oluşturduğudur. Düzenli ve yoğun egzersiz yapısal ve fonksiyonel adaptasyonlar nedeniyle atriyal, nodal ve ventriküler düzeyde aritmi gelişimine katkıda bulunabilir. Örneğin, düzenli egzersiz programları altta yatan mutasyonları olmayanlarda bile Aritmojenik Sağ Ventrikül Kardiyomiyopatisi'nin ilerlemesini indükleyebilir veya hızlandırabilir.

¹ Fzt., Erzincan Binali Yıldırım Üniversitesi Mengüçek Gazi Eğitim ve Araştırma Hastanesi Fizik Tedavi ve Rehabilitasyonu Kliniği, cansu_karaman@yahoo.com

² Dr. Öğr. Üyesi Erzincan Binali Yıldırım Üniversitesi Tip Fakültesi Kardiyoloji AD,
drsaidsogun2009@hotmail.com

yükselmesine ilaveten sağ prekordiyal derivasyonlarda 1mm'den derin negatif T dalgası).

BrS'li çoğu kişi yaşamları boyunca asemptomatik kalır. Vakaların çoğunda olaylar uyku veya dinlenme sırasında, ateşli durumlar sırasında veya bazen sıcak çarpması nedeniyle meydana gelir. AKA veya aritmik senkop-tan muzdarip hastalara İEKD implante edilmelidir. Tetikleyici ilaçlardan ve elektrolit dengesizliğinden kaçınmak gereklidir. Vücut ısısını 39°C altında tutmak gibi önleyici tedbirler önerilir (saunalar ve buhar odalarından uzak durarak; sıcak/nemli koşullarda spor yapmaktan kaçınarak; triatlon ve maraton gibi uzun süreli dayanıklılık sporlarından kaçınarak). Ateşli hastalık sırasında ateş agresif bir şekilde tedavi edilmelidir. BrS EKG paternine sahip asemptomatik hastalar ise vücut ısısını 39°C altında tutmak şartıyla tüm sporlarda yarışabilir (atrial fibrillation, maraton vb.).

KAYNAKLAR

- Priori SG, Blomstrom-Lundqvist C, Mazzanti A, Blom N, Borggrefe M, Camm J, Elliott PM, Fitzsimons D, Hatala R, Hindricks G, Kirchhof P, Kjeldsen K, Kuck KH, Hernandez-Madrid A, Nikolaou N, Norekval TM, Spaulding C, Van Gelder B, Veldhuisen DJ. 2015 ESC 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). EP Europace 2015;17:16011687.
- Kirchhof P, Fabritz L, Zwiener M, Witt H, Schafers M, Zellerhoff S, Paul M, Athai T, Hiller K-H, Baba HA, Breithardt G, Ruiz P, Wichter T, Levkau B. Ageand training-dependent development of arrhythmogenic right ventricular cardiomyopathy in heterozygous plakoglobin-deficient mice. Circulation 2006;114:17991806.
- Lie OH, Dejgaard LA, Saberniak J, Rootwelt C, Stokke MK, Edvardsen T, Haugaa KH. Harmful effects of exercise intensity and exercise duration in patients with arrhythmogenic cardiomyopathy. JACC Clin Electrophysiol 2018;4:744753.
- Heidbuchel H. The athlete's heart is a proarrhythmic heart, and what that means for clinical decision making. EP Europace 2018;20:14011411.
- Du X, Dong J, Ma C. Is atrial fibrillation a preventable disease? J Am Coll Cardiol 2017;69:19681982.
- Andersen K, Farahmand B, Ahlbom A, Held C, Ljunghall S, Michaelsson K, Sundstrom J. Risk of arrhythmias in 52 755 long-distance cross-country skiers: a cohort study. Eur Heart J 2013;34:36243631.

7. Brembilla-Perrot B, Houriez P, Beurrier D, Claudon O, Terrier de la Chaise A, Louis P. Predictors of atrial flutter with 1: 1 conduction in patients treated with class I antiarrhythmic drugs for atrial tachyarrhythmias. *Int J Cardiol* 2001;80:715.
8. Alboni P, Botto GL, Baldi N, Luzi M, Russo V, Gianfranchi L, Marchi P, Calzolari M, Solano A, Baroffio R, Gaggioli G. Outpatient treatment of recent-onset atrial fibrillation with the “pill-in-the-pocket” approach. *N Engl J Med* 2004;351:23842391.
9. Kirchhof P, Benussi S, Kotecha D, Ahlsson A, Atar D, Casadei B, Castella M, Dieiner H-C, Heidbuchel H, Hendriks J, Hindricks G, Manolis AS, Oldgren J, Popescu BA, Schotten U, Van Putte B, Vardas P, Agewall S, Camm J, Baron Esquivias G, Budts W, Carerj S, Casselman F, Coca A, De Caterina R, Deftereos S, Dobrev D, Ferro JM, Filippatos G, Fitzsimons D, Gorenek B, Guenoun M, Hohnloser SH, Kohl P, Lip GYH, Manolis A, McMurray J, Ponikowski P, Rosenhek R, Ruschitzka F, Savelieva I, Sharma S, Suwalski P, Tamargo JL, Taylor CJ, Van Gelder IC, Voors AA, Windecker S, Zamorano JL, Zeppenfeld K. 2016 ESC Guidelines for the management of atrial fibrillation developed in collaboration with EACTS. *Eur J Cardiothorac Surg* 2016;50:e1e88.
10. Steffel J, Verhamme P, Potpara TS, Albaladejo P, Antz M, Desteghe L, Haeusler KG, Oldgren J, Reinecke H, Roldan-Schilling V, Rowell N, Sinnaeve P, Collins R, Camm AJ, Heidbuchel H. The 2018 European Heart Rhythm Association Practical Guide on the use of non-vitamin K antagonist oral anticoagulants in patients with atrial fibrillation. *Eur Heart J* 2018;39:13301393.
11. Calkins H, Hindricks G, Cappato R, Kim Y-H, Saad EB, Aguinaga L, Akar JG, Badhwar V, Brugada J, Camm J, Chen P-S, Chen S-A, Chung MK, Nielsen JC, Curtis AB, Davies DW, Day JD, d'Avila A, de Groot NMSN, Di Biase L, Duytschaever M, Edgerton JR, Ellenbogen KA, Ellinor PT, Ernst S, Fenelon G, Gerstenfeld EP, Haines DE, Haissaguerre M, Helm RH, Hylek E, Jackman WM, Jalife J, Kalman JM, Kautzner J, Kottkamp H, Kuck KH, Kumagai K, Lee R, Lewalter T, Lindsay BD, Macle L, Mansour M, Marchlinski FE, Michaud GF, Nakagawa H, Natale A, Nattel S, Okumura K, Packer D, Pokushalov E, Reynolds MR, Sanders P, Scanavacca M, Schilling R, Tondo C, Tsao H-M, Verma A, Wilber DJ, Yamane T. 2017 HRS/EHRA/ECAS/APHRS/SOLAECE expert consensus statement on catheter and surgical ablation of atrial fibrillation. *Heart Rhythm* 2017;14:e275e444.
12. Calvo N, Mont L, Tamborero D, Berruezo A, Viola G, Guasch E, Nadal M, Andreu D, Vidal B, Sitges M, Brugada J. Efficacy of circumferential pulmonary vein ablation of atrial fibrillation in endurance athletes. *Europace* 2010;12:3036.
13. Sano S, Komori S, Amano T, Kohno I, Ishihara T, Sawanobori T, Ijiri H, Tamura K. Prevalence of ventricular preexcitation in Japanese schoolchildren. *Heart* 1998;79:374378.

14. Timmermans C, Smeets JL, Rodriguez LM, Vruchos G, van den Dool A, Wellens HJ. Aborted sudden death in the Wolff-Parkinson-White syndrome. *Am J Cardiol* 1995;76:492494.
15. Waxman MB, Wald RW, Sharma AD, Huerta F, Cameron DA. Vagal techniques for termination of paroxysmal supraventricular tachycardia. *Am J Cardiol* 1980;46:655664.
16. Miljoen H, Ector J, Garweg C, Saenen J, Huybrechts W, Sarkozy A, Willems R HH. Differential presentation of AV nodal reentrant tachycardia in athletes and non-athletes. *EP Europace* 2019;21:944949.
17. Obeyesekere MN, Leong-Sit P, Massel D, Manlucu J, Modi S, Krahm AD, Skanes AC, Yee R, Gula LJ, Klein GJ. Risk of arrhythmia and sudden death in patients with asymptomatic preexcitation: a meta-analysis. *Circulation* 2012;125:23082315.
18. Wellens HJ, Rodriguez LM, Timmermans C, Smeets JP. The asymptomatic patient with the Wolff-Parkinson-White electrocardiogram. *Pacing Clin Electrophysiol* 1997;20:20822086.
19. Gaita F, Giustetto C, Riccardi R, Mangiardi L, Brusca A. Stress and pharmacologic tests as methods to identify patients with Wolff-Parkinson-White syndrome at risk of sudden death. *Am J Cardiol* 1989;64:487490.
20. Pappone C, Manguso F, Santinelli R, Vicedomini G, Sala S, Paglino G, Mazzone P, Lang CC, Gulletta S, Augello G, Santinelli O, Santinelli V. Radiofrequency ablation in children with asymptomatic Wolff-Parkinson-White syndrome. *N Engl J Med* 2004;351:11971205.
21. Biffi A, Pelliccia A, Verdile L, Fernando F, Spataro A, Caselli S, Santini M, Maron BJ. Long-term clinical significance of frequent and complex ventricular tachyarrhythmias in trained athletes. *J Am Coll Cardiol* 2002;40:446452.
22. Lee V, Perera D, Lambiase P. Prognostic significance of exercise-induced premature ventricular complexes: a systematic review and meta-analysis of observational studies. *Heart Asia* 2017;9:1424.
23. Hutchinson MD, Garcia FC. An organized approach to the localization, mapping, and ablation of outflow tract ventricular arrhythmias. *J Cardiovasc Electrophysiol* 2013;24:11891197.
24. Luebbert J, Auberson D, Marchlinski F. Premature ventricular complexes in apparently normal hearts. *Card Electrophysiol Clin* 2016;8:503514.
25. Haissaguerre M, Nademanee K, Hocini M, Cheniti G, Duchateau J, Frontera A, Sacher F, Derval N, Denis A, Pambrun T, Dubois R, Jais P, Benoit D, Walton RD, Nogami A, Coronel R, Potse M, Bernus O. Depolarization versus repolarization abnormality underlying inferolateral J-wave syndromes: new concepts in sudden cardiac death with apparently normal hearts. *Heart Rhythm* 2019;16:781790.
26. Al-Khatib SM, Stevenson WG, Ackerman MJ, Bryant WJ, Callans DJ, Curtis AB, Deal BJ, Dickfeld T, Field ME, Fonarow GC, Gillis AM, Granger CB, Hammill SC, Hlatky MA, Joglar JA, Kay GN, Matlock DD, Myerburg RJ, Page RL. 2017 AHA/ACC/HRS guideline for management of patients with ventricular arrhythmias. *Circulation* 2017;136:e1-e112.

- hmias and the prevention of sudden cardiac death: executive summary. A report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Rhythm Society. *Heart Rhythm* 2018;15:e190e252.
27. Morschedi-Meibodi A, Evans JC, Levy D, Larson MG, Vasan RS. Clinical correlates and prognostic significance of exercise-induced ventricular premature beats in the community: the Framingham Heart Study. *Circulation* 2004;109:24172422.
 28. Cipriani A, Zorzi A, Sarto P, Donini M, Rigato I, Bariani R, De Lazzari M, Pilichou K, Thiene G, Iliceto S, Bassi C, Corrado D, Perazzolo Marra M, Baucé B. Predictive value of exercise testing in athletes with ventricular ectopy evaluated by cardiac magnetic resonance. *Heart Rhythm* 2019;16:239248.
 29. Priori SG, Napolitano C, Memmi M, Colombi B, Drago F, Gasparini M, DeSimone L, Coltorti F, Bloise R, Keegan R, Cruz Filho FES, Vignati G, Benatar A, DeLogu A. Clinical and molecular characterization of patients with catecholaminergic polymorphic ventricular tachycardia. *Circulation* 2002;106:6974.
 30. Sharma S, Drezner JA, Baggish A, Papadakis M, Wilson MG, Prutkin JM, La Gerche A, Ackerman MJ, Borjesson M, Salerno JC, Asif IM, Owens DS, Chung EH, Emery MS, Froelicher VF, Heidbuchel H, Adamuz C, Asplund CA, Cohen G, Harmon KG, Marek JC, Molossi S, Niebauer J, Pelto HF, Perez MV, Riding NR, Saarel T, Schmied CM, Shipon DM, Stein R, Vetter VL, Pelliccia A, Corrado D. International recommendations for electrocardiographic interpretation in athletes. *Eur Heart J* 2018;39:14661480.
 31. Priori SG, Schwartz PJ, Napolitano C, Bloise R, Ronchetti E, Grillo M, Vicentini A, Spazzolini C, Nastoli J, Bottelli G, Folli R, Cappelletti D. Risk stratification in the long-QT syndrome. *N Engl J Med* 2003;348:18661874.
 32. Sy RW, van der Werf C, Chattha IS, Chockalingam P, Adler A, Healey JS, Perrin M, Gollob MH, Skanes AC, Yee R, Gula LJ, Leong-Sit P, Viskin S, Klein GJ, Wilde AA, Krahn AD. Derivation and validation of a simple exercise-based algorithm for prediction of genetic testing in relatives of LQTS probands. *Circulation* 2011;124:21872194.
 33. Chandra N, Bastiaenen R, Papadakis M, Panoulas VF, Ghani S, Duschl J, Foldes D, Raju H, Osborne R, Sharma S. Prevalence of electrocardiographic anomalies in young individuals: relevance to a nationwide cardiac screening program. *J Am Coll Cardiol* 2014;63:20282034.
 34. Basavarajaiah S, Wilson M, Whyte G, Shah A, Behr E, Sharma S. Prevalence and significance of an isolated long QT interval in elite athletes. *Eur Heart J* 2007;28:29442949.
 35. Johnson JN, Ackerman MJ. Return to play? Athletes with congenital long QT syndrome. *Br J Sports Med* 2013;47:2833.
 36. Schwartz PJ, Ackerman MJ. The long QT syndrome: a transatlantic clinical approach to diagnosis and therapy. *Eur Heart J* 2013;34:31093116.

37. Vincent GM, Schwartz PJ, Denjoy I, Swan H, Bithell C, Spazzolini C, Crotti L, Piippo K, Lupoglazoff J-M, Villain E, Priori SG, Napolitano C, Zhang L. High efficacy of beta-blockers in long-QT syndrome type 1: contribution of noncompliance and QT-prolonging drugs to the occurrence of beta-blocker treatment “failures”. *Circulation* 2009;119:215221.
38. Ackerman MJ, Zipes DP, Kovacs RJ, Maron BJ. Eligibility and disqualification recommendations for competitive athletes with cardiovascular abnormalities: Task Force 10: The cardiac channelopathies: a scientific statement from the American Heart Association and American College of Cardiology. *Circulation* 2015;132:e3269.
39. Drezner JA, Rogers KJ. Sudden cardiac arrest in intercollegiate athletes: detailed analysis and outcomes of resuscitation in nine cases. *Heart Rhythm* 2006;3:755759.
40. Brugada J, Campuzano O, Arbelo E, Sarquella-Brugada G, Brugada R. Present status of Brugada syndrome: JACC state-of-the-art review. *J Am Coll Cardiol* 2018;72:10461059.
41. Frustaci A, Priori SG, Pieroni M, Chimenti C, Napolitano C, Rivolta I, Sanna T, Bellocchi F, Russo MA. Cardiac histological substrate in patients with clinical phenotype of Brugada syndrome. *Circulation* 2005;112:36803687.
42. Chockalingam P, Rammeloo LA, Postema PG, Hruda J, Clur S-AB, Blom NA, Wilde AA. Fever-induced life-threatening arrhythmias in children harboring an SCN5A mutation. *Pediatrics* 2011;127:e239e244. doi: 10.1542/peds.2010-1688.
43. Arai Y, Saul JP, Albrecht P, Hartley LH, Lilly LS, Cohen RJ, Colucci WS. Modulation of cardiac autonomic activity during and immediately after exercise. *Am J Physiol* 1989;256:H13241.
44. Smith ML, Hudson DL, Gaitzter HM, Raven PB. Exercise training bradycardia: the role of autonomic balance. *Med Sci Sports Exerc* 1989;21:4044.