

BÖLÜM 4

ACİL SERVİSTE TRAVMATİK KARDİYAK TAMPONADLARA YAKLAŞIM

Ayhan TABUR¹

Alper TABUR²

GİRİŞ

Travmatik kardiyak tamponat, toraks travmalarının en ölümcül komplikasyonlarından biridir ve genellikle penetran yaralanmaların, daha nadiren ise yüksek enerjili künt travmaların ardından ortaya çıkar (1). Perikard boşluğuna hızla dolan kan, düşük komplianslı perikard içinde basıncı artırarak kalbin diyastolik doluşunu kısıtlar ve dakikalar içinde kardiyak output'un kritik düzeyde azalmasına yol açar. Bu fizyopatolojik süreç, tedavi edilmezse çok kısa sürede kardiyak arrestle sonuçlanabilir (2-3).

Acil servis açısından travmatik kardiyak tamponat, “altın dakikalar” içinde tanı konması gereken bir klinik tablodur. Çünkü tanıdaki her gecikme belirgin biçimde artırmaktadır (4). Klasik klinik bulgular olan Beck triadı (hipotansiyon, juguler venöz dolgunluk ve boğuk kalp sesleri) her zaman belirgin olmayabilir; özellikle eşlik eden hipovolemi durumlarında bu tablo silikleşebilir (5). Bu nedenle yüksek klinik şüphe ve sistematik bir yaklaşım hayati öneme sahiptir. (**Point-of-Care Ultrasonografi**)

Son yıllarda yatakbaşı ultrasonografi (POCUS, *Point-of-Care Ultrasonography*) ve travma hastalarına yönelik odaklı ultrason değerlendirmesi (FAST-EKO, *Focused Assessment with Sonography in Trauma*) protokollerinin acil tıpta rutin uygulamaya girmesi, travmatik kardiyak tamponatın erken tanınmasını ve hızlı müdahale planlamasının yapılabilmesini mümkün kılmıştır. (6). Ultrasonun yaygınlaşması sayesinde hem tanı süresi kısalmış hem de gereksiz zaman kayıpları

¹ Uzm. Dr., SBÜ Diyarbakır Gazi Yaşargil Eğitim ve Araştırma Hastanesi, Acil Tıp Kliniği, ayhantabur58@gmail.com, 0000-0002-4743-766X

² Op. Dr., SBÜ Kocaeli Şehir Hastanesi, Göğüs Cerrahisi Kliniği, drtabur01@gmail.com, ORCID iD: 0009-0004-4173-9570

KAYNAKLAR

- 1-Imazio M, De Ferrari GM. Cardiac tamponade: an educational review. *European heart journal. Acute cardiovascular care*. 2021 Jan 1;10(1):102-9.
- 2-Adler Y, Ristić AD, Imazio M, Brucato A, Pankuweit S, Burazor I, Seferović PM, Oh JK. Cardiac tamponade. *Nature Reviews Disease Primers*. 2023 Jul 20;9(1):36.
- 3-Mishra B, Gupta A, Sagar S, Singhal M, Kumar S. Traumatic cardiac injury: experience from a level-1 trauma centre. *Chinese journal of traumatology*. 2016 Dec 1;19(06):333-6.
- 4-Chu A, Yee J. Cardiac tamponade. *Journal of Education & Teaching in Emergency Medicine*. 2020 Oct 15;5(4):S84.
- 5-Da Silva JV, Nunes EN, Sales WB, Paz NH, de França EE, de Abreu Morais PS, de Morais Lima JH. Clinical Complications of Beck's Triad in Cardiac Tamponade: Implications for Management and Patient Outcomes. *Integrative Biomedical Research*. 2024 Oct 22;8(10):1-6.
- 6- Galiatsou E, Caballero CH. POCUS in Pericardial Effusion and Cardiac Tamponade. In *Cardio-pulmonary Point of Care Ultrasound 2023* Oct 11 (pp. 327-341). Cham: Springer International Publishing.
- 7- Zanza C, Longhitano Y, Artico M, Cammarota G, Barbanera A, Racca F, Audo A, Ravera E, Migneco A, Piccioni A, Franceschi F. Bedside cardiac pocus in emergency setting: a practice review. *Reviews on Recent Clinical Trials*. 2020 Dec 1;15(4):269-77.
- 8- Magon F, Longhitano Y, Savioli G, Piccioni A, Tesauro M, Del Duca F, Napoletano G, Volonnino G, Maiese A, La Russa R, Di Paolo M. Point-of-care ultrasound (POCUS) in adult cardiac arrest: clinical review. *Diagnostics*. 2024 Feb 16;14(4):434.
- 9- Symbas PN. Cardiac trauma. *American heart journal*. 1976 Sep 1;92(3):387-96.
- 10- Long B, Koyfman A. Cardiac trauma. *injury*. 2019;8(9):12-6.
- 11-RWJBarnabas Health. Cardiac Tamponade [Internet]. West Orange (NJ): RWJBarnabas Health; [cited 2025 Oct 15]. Available from: <https://www.rwjbh.org/treatment-care/heart-and-vascular-care/diseases-conditions/cardiac-tamponade/>
- 12- Imazio M, Adler Y. Management of pericardial effusion. *European heart journal*. 2013 Apr 21;34(16):1186-97.
- 13- Reyalden R, Chan N, Lo Presti S, Fava A, Anthony C, Rodriguez ER, Tan CD, Saliba W, Cremer PC, Klein AL. Pericardial anatomy, interventions and therapeutics: A contemporary review. *Structural Heart*. 2021 Nov 2;5(6):556-69.
- 14- Shabetai R. The pericardium. *Springer Science & Business Media*; 2003 Oct 31.
- 15- Chelly MR, Margulies DR, Mandavia D, Torbati SS, Mandavia S, Wilson MT. The evolving role of FAST scan for the diagnosis of pericardial fluid. *Journal of Trauma and Acute Care Surgery*. 2004 Apr 1;56(4):915-7.
- 16-Gray H. *Anatomy of the human body*. 1918. Philadelphia: Lea & Febiger. 1821.
- 17- Campbell NC, Thomson SR, Muckart DJ, Meumann CM, Van Middelkoop I, Botha JB. Review of 1198 cases of penetrating cardiac trauma. *Journal of British Surgery*. 1997 Dec;84(12):1737-40.
- 18- Scherf S. Emergency Department Thoracotomy as an Intervention for Penetrating Trauma to the Thoracic Cavity: A Systematic Review.
- 19- Adegbala O, Olagoke O, Adejumo A, Akintoye E, Oluwole A, Alebna P, Williams K, Lieberman R, Afonso L. Incidence and outcomes of cardiac tamponade in patients undergoing cardiac resynchronization therapy. *International journal of cardiology*. 2018 Dec 1;272:137-41.
- 20- Spodick DH. Pathophysiology of cardiac tamponade. *Chest*. 1998 May 1;113(5):1372-8.
- 21- Ameli S, Shah PK. Cardiac tamponade: pathophysiology, diagnosis, and management. *Cardiology clinics*. 1991 Nov 1;9(4):665-74.
- 22- Hoit BD. Pericardial effusion and cardiac tamponade pathophysiology and new approaches to treatment. *Current Cardiology Reports*. 2023 Sep;25(9):1003-14.
- 23- Appleton C, Gillam L, Koulogiannis K. Cardiac tamponade. *Cardiology clinics*. 2017 Nov 1;35(4):525-37.

- 24- Chu A, Yee J. Cardiac tamponade. *Journal of Education & Teaching in Emergency Medicine*. 2020 Oct 15;5(4):S84.
- 25- Jensen JK, Poulsen SH, Mølgaard H. Cardiac tamponade: a clinical challenge. *Кардиология: от науки к практике*. 2017(4):107-13.
- 26- Kızıltunç E, Ünlü S, Yakıcı İE, Kundi H, Korkmaz A, Çetin M, Örnek E. Clinical characteristics and prognosis of cardiac tamponade patients: 5year experience at a tertiary center. *Herz*. 2020 Nov;45(7):676-83.
- 27- Brewster SA, Thirlby RC, Snyder WH. Subxiphoid pericardial window and penetrating cardiac trauma. *Archives of surgery*. 1988 Aug 1;123(8):937-41.
- 28- Zeiler J, Idell S, Norwood S, Cook A. Hemothorax: a review of the literature. *Clinical pulmonary medicine*. 2020 Jan 1;27(1):1-2.
- 29- Fitzgerald M, Spencer J, Johnson F, Marasco S, Atkin C, Kossmann T. Definitive management of acute cardiac tamponade secondary to blunt trauma. *Emergency Medicine Australasia*. 2005 Oct;17(5-6):494-9.
- 30- Assaf M, Abdalla A, Shaltout AE, Ahmad S, Haq AU, Khan HA, Saleem MF, Ahmad MN, Abouelsadat MK, Awan M, Malik N. Pericardial Tamponade in Trauma: A Systematic Review of Diagnosis, Emergency Management, and Surgical Outcomes. *Cureus*. 2025 Sep 9;17(9):e91921.
- 31- Galiatsou E, Caballero CH. POCUS in Pericardial Effusion and Cardiac Tamponade. In *Cardio-pulmonary Point of Care Ultrasound 2023* Oct 11 (pp. 327-341). Cham: Springer International Publishing.
- 32- Rabat SJ. Advanced Eco-FAST. Beyond the FAST. *Ultrasound in Medicine and Biology*. 2017 Jan 1;43:S106.
- 33- Kara H. The role of thoracic computed tomography in penetrating cardiac injury. *Turkish Journal of Thoracic and Cardiovascular Surgery*. 2014;22(2).
- 34- Özkaynak B, Gümüş F, Polat A, Kayalar N, Erentuğ V. Cardiac trauma. *JAREM. Journal of Academic Research in Medicine*. 2014 Aug 1;4(2):45.
- 35- Ang KP, Nordin RB, Lee SC, Lee CY, Lu HT. Diagnostic value of electrocardiogram in cardiac tamponade. *Med J Malaysia*. 2019 Feb 1;74(1):51-6.
- 36- Restrepo CS, Lemos DE, Lemos JA, Velasquez E, Diethelm L, Ovella TA, Martinez S, Carrillo J, Moncada R, Klein JS. Imaging findings in cardiac tamponade with emphasis on CT. *Radiographics*. 2007 Nov;27(6):1595-610.
- 37- Offenbacher J, Liu R, Venitelli Z, Martin D, Fogel K, Nguyen V, Kim PK. Hemopericardium and cardiac tamponade after blunt thoracic trauma: a case series and the essential role of cardiac ultrasound. *The Journal of Emergency Medicine*. 2021 Sep 1;61(3):e40-5.
- 38- Pendleton AC, Leichtle SW. Cardiac tamponade from blunt trauma. *The American Surgeon*. 2022 Jun;88(6):1319-21.
- 39- Collins D. Aetiology and management of acute cardiac tamponade. *Critical care and Resuscitation*. 2004 Mar 1;6(1):54-8.
- 40- Fejka M, Dixon SR, Safian RD, O'Neill WW, Grines CL, Finta B, Marcovitz PA, Kahn JK. Diagnosis, management, and clinical outcome of cardiac tamponade complicating percutaneous coronary intervention. *The American journal of cardiology*. 2002 Dec 1;90(11):1183-6.
- 41- Charalambous E, Manousakis S, Kioulpalis A, Skrivanou A, Vrouchos G. Emergency electrocardiography-guided pericardiocentesis in cardiac tamponade. *Critical Care*. 2007 Mar 1;11(Suppl 2):P244.
- 42- Levis A.M. Cardiovascular emergency!. *Nursing2025*. 1999 Jun 1;29(6):49-51.
- 43- Lee TH, Ouellet JF, Cook M, Schreiber MA, Kortbeek JB. Pericardiocentesis in trauma: a systematic review. *Journal of Trauma and Acute Care Surgery*. 2013 Oct 1;75(4):543-9.
- 44- De Carlini CC, Maggiolini S. Pericardiocentesis in cardiac tamponade: indications and practical aspects. *EJ Cardiol Pract*. 2017 Oct;15:3-5.
- 45- Callahan M. Pericardiocentesis in traumatic and nontraumatic cardiac tamponade. *Annals of Emergency Medicine*. 1984 Oct 1;13(10):924-45.
- 46- Katsura M, Ambrose C, Siletz AE, Martin MJ, Inaba K, Matsushima K. The contemporary use of

- emergency pericardiocentesis in trauma: A nationwide trend analysis. *The American Journal of Emergency Medicine*. 2025 Aug 29.
- 47- Tangkilisan A, Sukanto W, Tamburian C, Lolongan GR. Sternotomy or Thoracotomy: Which One?. *e-CliniC*. 2024;12(1):116-20.
- 48- Fallouh H, Dattani-Patel R, Rathinam S. Blunt thoracic trauma. *Surgery (Oxford)*. 2017 May 1;35(5):262-8.
- 49- Shorr RM, CRITTENDEN M, INDECK M, HARTUNIAN SL, Rodriguez AU. Blunt thoracic trauma analysis of 515 patients. *Annals of surgery*. 1987 Aug 1;206(2):200-5.
- 50- Ordoñez CA, Parra MW, Manzano-Nunez R, Herrera-Escobar JP, Serna JJ, Ossa PR, Mejia D, Del Valle AM, Salcedo A, Salamea JC, Rodriguez F. Intraoperative combination of resuscitative endovascular balloon occlusion of the aorta and a median sternotomy in hemodynamically unstable patients with penetrating chest trauma: is this feasible?. *Journal of Trauma and Acute Care Surgery*. 2018 May 1;84(5):752-7.
- 51- Leiva EH, Carreño M, Bucheli FR, Bonfanti AC, Umaña JP, Dennis RJ. Factors associated with delayed cardiac tamponade after cardiac surgery. *Annals of cardiac anaesthesia*. 2018 Apr 1;21(2):158-66.
- 52- Fitzgerald M, Spencer J, Johnson F, Marasco S, Atkin C, Kossmann T. Definitive management of acute cardiac tamponade secondary to blunt trauma. *Emergency Medicine Australasia*. 2005 Oct;17(5-6):494-9.
- 53- Sánchez-Enrique C, Nuñez-Gil IJ, Viana-Tejedor A, De Agustín A, Vivas D, Palacios-Rubio J, Vilchez JP, Cecconi A, Macaya C, Fernández-Ortiz A. Cause and long-term outcome of cardiac tamponade. *The American Journal of Cardiology*. 2016 Feb 15;117(4):664-9.