

15. BÖLÜM

GEBELİKTE PULMONER TROMBOEMBOLİ

Güven ARSLAN¹

Gebelik sürecinde hemostatik sistemin aktivitesi, doğum ve postpartum sürecin gereksinimleri doğrultusunda giderek artar (1). Endotel hasarları, kan akımında staz gelişimi ve koagülasyon yollarının aşırı aktivasyonu trombüs oluşumunda rol almaktadır (1).

Pulmoner emboli, venöz trombozun bir komplikasyonu olup, herhangi bir trimesterde görülen gebelikle ilişkili ölümlerin önde gelen sebeplerindendir (1). Spesifik bir klinik özelliği olmaksızın oldukça yaygın görülen bir bozukluktur (1). Ölümcül durumlardan kaçınmak için teşhis ve tedavide hızlı olmak gerekmektedir (1). Pulmoner emboli teşhis ve tedavisindeki gecikmeler, yaygın rastlanan ve üzerinde dikkatle durulması gereken konulardandır (1).

Gebelikte görülen pulmoner emboli, tüm gebelik süresince ölüme sebebiyet verebilmektedir (1). Koagülasyon sistemindeki bozukluğun bir komplikasyonu olup tromboembolik hastalığa neden olur (1). Semptom ve bulgular hastalığa spesifik olmadığından tanı gecikebilir veya atlanabilir (1). Embolik bir epizot gözden kaçabildiği için hastaların yaklaşık üçte biri ölmektedir (1). Masif bir pulmoner emboli sonrasında ise hastalar aniden ölebilmektedir (1). Hastalarda gelişebilecek bir koagülasyon bozukluğunun tahmin edilmesi, tromboembolik hastalığın önlenmesi ve etkili profilaktik tedavinin verilebilmesi açısından çok önemlidir (2).

¹ Uzm. Dr., Necip Fazıl Şehir Hastanesi, drguvenarслан27@gmail.com

Son birkaç on yılda; tanısal araçlar ve ilerlemeler, hekimlerin doğru tanıya yönelik yeteneklerinin ilerlemesi pulmoner emboli tanı ve tedavisinin uygun ve verilmesini sağlamıştır (1). Böylece anne ve fetus için oluşabilecek komplikasyonlarda azalma sağlanmıştır (1).

KAYNAKLAR

1. Irene M Orfanoudaki. Pulmonaryembolism in pregnancy: suspicion, diagnosis and therapy. *Obstetrics&Gynecology International Journal* 2019, Volume 10, Issue 1,2019.
2. Ozsu S, Oztuna F, Bulbul Y, et al. The role of risk factors in delayed diagnosis of pulmonary embolism. *Am Emerg Med.* 2011 ve 29(1):26–32.
3. Marik PE, Plante LA. Venous thromboembolic disease and pregnancy. *N Engl J Med.* 2008 ve 359(19):2025–2033.
4. Gherman RB, Goodwin TM, Leung B, et al. Incidence,clinicalcharacteristics and timing of objectively diagnosed venous thromboebolism during pregnancy. *Obstet Gynecology.* 1999 ve 94:730–734.
5. Toglia MR, Weg JG. Venous thromboebolism during pregnancy. *N Engl J Med.* 1996 ve 335:108–114.
6. Bates SM, Greer IA, Middeldorp S, et al. VTE, thrombophilia,antithrombootictherapy and pregnancy: antithrombotic therapy and prevention of thrombosis. 9th ed, American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. *Chest.* 2012;141(2 suppl) Qe691S–736S.
7. Philipp CS, Faiz AS, Beckman MG, et al. Differences in thrombotic risk factors in black and white women with adverse pregnancy outcome.*Thromb Res.* 2014 ve 133(1):108–111.
8. Born D, Martinez EE, Almeida PA, et al. Pregnancy in patientswith prosthetic heart valves: the effects of anticoagulation on mather, fetus and neonate. *Am Heart J.* 1992 ve 124(2):413–417.
9. Meschengieser SS, Fondevila CG, Santarelli MT, et al. Anticoagulation in pregnant women with mechanical heart valve prostheses. *Heart.* 1999 ve 82(1):23–26.
10. Consensus, The Anticoagulation in Prosthetic Valves and Pregnancy Consensus Report Panel and Scientific Rounttable. Anticoagulation and enoxaparin in patients with prosthetic heart valves and/or pregnancy. *Fetal-Maternal Medicine* ve 2002.
11. Ouellette DR, Harrington A, Kamangar N, et al. Pulmonary Embolism. 2018.
12. Biol., Heit JA. The epidemiology of venous thromboembolism in the community. *Arterioscler Thromb Vasc* ve 28(3):370–372.
13. Scheider D, Lilinfeld DE, Im W. The epidemiology of pulmonary embolism:racial contrasts in I incidence and in-hospital case fatality. *J Natl Med Assoc.* 2006 ve 98(12)1967–1972.
14. Bernstein D, Coupey S, Schonberg SK. Pulmonary embolism in adolescents. *Am J Dis Child.* 1986 ve 140(7):667–671.

15. Qaseem A, Snow V, Barry P, et al. Current diagnosis of venous thromboembolism in primary care: a clinical practice guideline from the American Academy of Family Physicians and the American College of Physicians. *Ann Intern Med.* 2007 ve 146(6):454–458.
16. Qaseem A, Snow V, Barry P, et al. Current diagnosis of venous thromboembolism in primary care: a clinical practice guideline from the American Academy of Family Physicians and the American College of Physicians. *Ann Fam Med.* 2007 ve 5(1):57–62.
17. Kucher N, Rossi E, De Rosa M, et al. Massive pulmonary embolism. *Circulation.* 2006 ve 113(4):577–582.
18. Goldhaber SZ, Visani L, De Rosa M. Acute pulmonary embolism: clinical outcomes in the International Cooperative Pulmonary Embolism Registry (ICOPER). *Lancet.* 1999 ve 353(9162):1386–1389.
19. Konstantinides SV, Torbicki A, Agnelli G, et al. 2014 ESC guidelines on the diagnosis and management of acute pulmonary embolism. *Eur Heart J.* 2014 ve 35(43):3033–3069.
20. Meyer G, Planquette B, Sanchez O. Long-term outcome of pulmonary embolism. *Curr Opin Hematol.* 2008 ve 15(5):499–503.
21. Worsley DF, Alavi A. Comprehensive analysis of the results of the PIOPED Study. Prospective investigation of pulmonary embolism diagnosis study. *J Nucl Med.* 1995 ve 36(12):2380–2387.
22. Hill, Boyden EA. Segmental anatomy of the lungs: study of the patterns of the segmental bronchi and related pulmonary vessels. New York: McGraw- ve 1955:23–32.
23. Mitchell RN, Kumar V. Hemodynamic disorders, thrombosis, and shock. In: Kumar V, Cotran RS, Robbins SL, editors. *Basic Pathology.* 6TH ED. Philadelphia: WB Saunders ve 1997:60–80.
24. Wharton LR, Pierson JW. Minor forms of pulmonary embolism after abdominal operations. *JAMA.* 1922 ve 79(23):1904–1910.
25. J, Tapson VF. Acute pulmonary embolism. *N Engl J Med.* 2007 ve 358(10):1037–1053.
26. Bauersachs RM, Manolopoulos K, Hoppe I, et al. More on the “ART” behind the clot: solving the mystery. *J Thromb Haemost.* 2007 ve 439, 5(2):438–.
27. Chan WS, Chunilal S, Lee A, et al. A red blood cell agglutination D-dimer test to exclude deep venous thrombosis in pregnancy. *Ann Intern Med.* 2007 ve 147(3):165–170.
28. Boehlen F, Epiney M, Boulvain M, et al. D-dimer levels during pregnancy and the post-partum period. Results of two studies. *Rev Med Suisse.* 2005 ve 1:296–298.
29. Turedi S, Gunduz A, Mentese A, et al. The value of ischemia-modified albumin compared with d-dimer in the diagnosis of pulmonary embolism. *Respir Res.* 2008 ve 9:49.
30. J, Konstantinides S. Clinical practice. Acute pulmonary embolism. *N Engl J Med.* 2007 ve 359(26):2804–2813.
31. Meyer T, Binder L, Hruska N, et al. Cardiac troponin I elevation in acute pulmonary embolism is associated with right ventricular dysfunction. *J Am Coll Cardiol.* 2000 ve 36(5):1632–1636.

32. Jimenez D, Uresandi F, Otero R, et al. Troponin-based risk stratification of patients with acute nonmassive pulmonary embolism: systematic review and metaanalysis. *Chest*. 2009 ve 136(4):974–983.
33. Kucher N, Printzen G, Goldhaber SZ. Prognostic role of brain natriuretic peptid in acute pulmonary embolism. *Circulation*. 2003 ve 2547, 107(20):2545–2547.
34. Kline JA, Zeitouni R, Marchick MR, et al. Comparison of 8 biomarkers for prediction of right ventricular hypokinesia 6 months after submassive pulmonary embolism. *Am Heart J*. 2008 ve 156(2):308–314.
35. Winer -Muram HT, Boone JM, Brown HL, et al. Pulmonary embolism in pregnant patients:fetal radiation dose with helical CT. *Radiology*. 2002 ve 224:487–492.
36. Hurwitz LM, Yoshizumi T, Reiman RE, et al. Radiation dose to the fetus from body MDCT during early gestation. *AJR Am J Roentgenol*. 2006 ve 186(3):871–876.
37. Doshi SK, Negus IS, Odukok JM. Fetal radiation dose from CT pulmonary angiography in late pregnancy: a phantom study. *Br J Radiol*. 2008 ve 81(968):653–658.
38. Eskandar OS, Eckford SD, Watkinson T. Safety of diagnostic imaging in pregnancy. Part 1: X-ray, nuclear medicine investigations, computed tomography and contrast media. *Obstet Gynaecol*. 2010 ve 12:71–78.
39. Becattini C, Agnelli G, Vedovati MC, et al. Multidetector computed tomography for acute pulmonary embolism: diagnosis and risk stratification in a single test. *Eur Heart J*. 2011 ve 32(13):1657–1663.
40. Hiorns MP, Mayo JR. Spiral computed tomography for acute pulmonary embolism. *Can Assoc Radiol J*. 2002 ve 53:258–268.
41. Fedullo PF, Tapson VF. Clinical practice. The evaluation of suspected pulmonary embolism. *N Engl J Med*. 2003 ve 349:1247–1256.
42. Bettmann MA, Baginski SG, White RD, et al. ACR Appropriateness Criteria acute chest pain-suspected pulmonary embolism. *J Thorac Imaging*. 2012 ve 27(2):W28–W31.
43. Gupta A, Frazer CK, Ferguson JM, et al. Acute pulmonary embolism: diagnosis with MR angiography. *Radiology*. 1999 ve 210(2):353–359.
44. Vanni S, Polidori G, Vergara R, et al. Prognostic value of ECG among patients with acute pulmonary embolism and normal blood pressure. *Am J Med*. 2009 ve 122(3):257–264.
45. Dresden S, Mitchell P, Rahimi L, et al. Right Ventricular dilatation on bedside echocardiography performed by emergency physicians aids in the diagnosis of pulmonary embolism. *Ann Emerg Med*. 2014 ve 24, 63(1):16–24.
46. Özsu S, Uzun O. Gebelerde pulmoner tromboembolinin tanı ve tedavisi (Treatment and diagnosis of pulmonary embolism in pregnancy). *Tuberk Toraks*. 2015 Jun ve 26167970., 63(2):132-9. Turkish. doi: 10.5578/tt.6342. PMID:.
47. Ginsberg JS, Hirsh J, Turner DC, et al. Risk to the fetus of anticoagulant therapy during pregnancy. *Thromb Haemost*. 1989 ve 61:197–203.
48. Ginsberg JS, Bates SM. Management of venous thromboembolism during pregnancy. *J Thromb Haemost*. 2003 ve 1(7):1435–1442.
49. Pravinkumar E, Webster NR. HIT/HITT and alternative anticoagulation: current concepts. *Br J Anaesth*. 2003 ve 91(4):676–685.

50. Warkentin TE, Levine MN, Hirsh J, et al. Heparin – induced thrombocytopenia in patients treated with low-molecular -weight heparin or unfractionated heparin. *N Engl J Med.* 1995 ve 332:1330–1335.
51. Van Dongen CJ, van den Belt AG, Prins MH, et al. Fixed dose subcutaneous low molecular weight heparins versus adjusted dose unfractionated heparin for venous thromboembolism. *Cochrane Database Syst Rev.* 2004 ve (4):CD001100.
52. Dolovich LR, Ginsberg JS, Dpiletos JD, et al. A meta-analysis comparing low-molecular-weight heparin with unfractionated heparin in the treatment of venous thromboembolism. *Arch Intern Med.* 2000 ve 160(2):181–188.
53. Devendra G, Morris T. Pulmonary embolism and deep venous thrombosis treated with either low molecular weight heparin or unfractionated heparin have the same incidence of thrombocytopenia. *Chest.* 2000 ve 118:262.
54. Lindhoff -Last E, Nkov R, Misselwitz, Breddin HK, Bauersachs R. Incidence and clinical relevance of heparin -induced antibodies in patients with deep vein thrombosis treated with unfractionated or low-molecular -weight heparin *Br J Haematol.* 2002;118:1137-1142.
55. Schulman S, Beyth RJ, Kearon C et al. Hemorrhagic complications and thrombolytic treatment: American college of chest physicians evidence based clinical practice guidelines. *Chest.* 2008 ve Suppl):257S–298S.
56. Von Mandach U, Aebersold F, Huch A. Short-term low -dose heparin plus bedrest impairs bone metabolism in pregnant women. *Eur J Obstet Gynecol Reprod Biol.* 2003 ve 106:25–30.
57. Heart, Guidelines on diagnosis and management of acute pulmonary embolism. Task Force on Pulmonary Embolism. European Society of Cardiology. *Eur ve* 21(16):1301–1336.
58. Hirsh J, Warkentin TE, Shaughnessy SG, et al. Heparin and low-molecular-weight heparin: mechanisms of action, pharmacokinetics, dosing, monitoring, efficacy, and safety. *Chest.* 2001 ve 119:64S–94S.
59. Bates SM, Ginsberg JS. How we manage venous thromboembolism during pregnancy. *Blood.* 2002 ve 100(10):3470–3478.
60. Jacobsen AF, Qvigstad E, Sandset PM. Low molecular weight heparin (dalteparin)for the treatment of venous thromboembolism in pregnancy. *BJOG.* 2003 ve 110(2):139–144.
61. Paralkar VR, Rubin RN. Anticoagulation: An Update for Primary Care. *Consultant.* 2011 ve 51(10).
62. Bates SM, Greer IA, Pabinger I, et al. Venous thromboembolism, thrombophilia, antithrombotic therapy, and pregnancy: American college of chest physicians evidence-based clinical practice guidelines. 8th ed, *Chest.* 2008 ve Suppl):844S–886S.
63. Greer IA, Thomson AJ. Management of venous thromboembolism in pregnancy. *Best Pract Res Clin Obstet Gynaecol.* 2001 ve 15:583–603.
64. Schaefer C, Hannemann D, Meister R, et al. Vitamin K antagonists and pregnancy outcome. A multi-centre prospective study. *Thromb Haemost.* 2006 ve 95(6):949–957.
65. Lancet., Greer IA. Thrombosis in pregnancy: maternal and fetal issues. ve 353(9160):1258–1265.

66. Buller HR, Agnelli G, Hull RD, et al. Antithrombotic therapy for venous thromboembolic disease: the Seventh ACCP Conference on Antithrombotic and Thrombolytic Therapy. *Chest*. 2004 ve 126:401S–428S.
67. Dulitzki M, Pauzner R, Langevitz P, et al. Low molecular weight heparin during pregnancy and delivery: a preliminary experience with 41 pregnancies. *Obstet Gynecol*. 1996 ve 87(3):380–383.
68. James A, Committee on Practice Bulletins—Obstetrics. Practice Bulletin No 123: Thromboembolism in pregnancy. *Obstet Gynecol*. 2011 ve 118(3):718–729.
69. Geerts WH, Bergqvist D, Pineo GF, et al. Prevention of venous thromboembolism: American college of chest physicians evidence-based clinical practice guidelines. 8th ed. *Chest*. 2008 ve Suppl):381–453, 133(6).
70. Greer IA, Nelson-Piercy C. Low-molecular-weight heparins for thromboprophylaxis and treatment of venous thromboembolism in pregnancy: a systematic review of safety and efficacy. *Blood*. 2005 ve 106(2):401–407.
71. Linkins L-A, Choi PT, Douketis JD. Clinical impact of bleeding in patients taking oral anticoagulant therapy for venous thromboembolism. A meta-analysis. *Ann Intern Med*. 2003 ve 139(11):893–900.
72. Douketis JD, Kearon C, Bates SM, et al. Risk of fatal pulmonary embolism in patients with treated venous thromboembolism. *JAMA*. 1998 ve 279(6):458–462.
73. Bates SM, Greer IA, Pabinger I, et al. Venous thromboembolism, thrombophilia, antithrombotic therapy, and pregnancy: American College of Chest Physicians evidence-based clinical practice guidelines. 8th ed, *Chest*. 2008 ve 6):844S–886, 133(suppl 6):844S–886.
74. Jacobsen AF, Skjeldestad FE, Sandset PM. Ante- and postnatal risk factors of venous thrombosis: a hospital-based case-control study. *J Thromb Haemost*. 2008 ve 6(6):905–912.