

2. BÖLÜM

OPERASYON ÖNCESİ İNFEKSİYON AÇISINDAN SİSTEMİK RİSK DEĞERLENDİRMESİ

Ülkü SUR ÜNAL

GİRİŞ

Ortopedik cerrahilerde cerrahi alan infeksiyonu (CAİ), ortopedik cerrahi geçiren hastalar için ciddi sonuçlar doğurabilen klinik bir problemdir. CAİ, ameliyattan sonraki 30 gün içinde veya bir hastaya implant yerleştirilmesi halinde ameliyattan sonraki 1 yıl içinde cerrahi yaranın mikrobiyal kontaminasyonu olarak tanımlanır (1). Amerika Birleşik Devletleri'nde yıllık CAİ insidansının %1,07 olduğu tahmin edilmektedir. CAİ ile ilgili yıllık 8000 hastada ölüm ve 10 milyar dolara varan finansal tedavi maliyeti bildirilmektedir (2). Dünya çapında CEİ insidansı %2,6 ile%41,9 arasında olduğu ve 55 yaş ve üst hastalarda daha sık görüldüğü bildirilmektedir (3). Cerrahi alan infeksiyonları, morbidite, mortalite, hastanede yatış sürelerinin uzaması ve medikal kaynakların kullanımında artış ile sonuçlanmaktadır.

CAİ'nin birçok önlenabilir nedeni tespit edilmiştir ve uygun önlemler alınırca, görülme sıklığı azaltılabilir. Hastalar, cerrahlar ve hemşirelerin yanı sıra ameliyat odası ve enstrümantasyon başlıca etken alanlarıdır. İmplant cerrahisinde infeksiyonları azaltmak için çeşitli yöntemler oluşturulmuştur, ancak cerrahi alan infeksiyonlarının oluşumunun önüne geçilememiştir.

Hasta, cerrahi işlem ve hastane hizmetleri ile ilgili çeşitli faktörler cerrahi alan infeksiyonunun gelişmesine katkıda bulunmaktadır. Bu risk faktörlerine göre, CAİ risk değerlendirmesi için çeşitli puanlama sistemleri geliştirilmeye çalışılmıştır (4-14). Bu puanlama sistemleri genel olarak preoperatif, intraoperatif ve postoperatif faktörlerin kombinasyonuna göre değerlendirilir. Preoperatif risk faktörleri literatürde cinsiyet, yaş, obezite, profilaktik antibiyotikler, preoperatif anemi varlığı, ameliyat öncesi hastanede kalış süresi, malnütrisyon, ASA skoru, tütün sigara kullanımı, kronik hastalık varlığı ve ameliyat öncesi hiperglisemi olarak özetlenmektedir.

KAYNAKÇA

1. Horan TC, Gaynes RP, Martone WJ, Jarvis WR, Emori TG. CDC definitions of nosocomial surgical site infections, 1992: a modification of CDC definitions of surgical wound infections. *Infect Control Hosp Epidemiol* 1992;13(10):606-608
2. Scott RD II. *The Direct Medical Costs of Healthcare-Associated Infections in U.S. Hospitals and the Benefits of Prevention*. Atlanta, GA: Centers for Disease Control and Prevention, 2009.
3. Lilani SP, Jangale N, Chowdhary A, Daver GB. Surgical site infection in clean and clean-contaminated cases. *Indian J Med Microbiol* 2005;23(4):249-252
4. Velasco E, Thuler LC, Martins CA, Dias LM, Goncalves VM. Risk index for prediction of surgical site infection after oncology operations. *Am J Infect Control* 1998;26:217-23.
5. Pessaux P, Atallah D, Lermite E, Msika S, Hay JM, Flamant Y, et al. Risk factors for prediction of surgical site infections in "clean surgery". *Am J Infect Control* 2005;33:292-8.
6. Pessaux P, Lermite E, Blezel E, Msika S, Hay JM, Flamant Y, et al. Predictive risk score for infection after inguinal hernia repair. *Am J Surg* 2006;192:165-71.
7. Neumayer L, Hosokawa P, Itani K, El-Tamer M, Henderson WG, Khuri SF. Multivariable predictors of postoperative surgical site infection after general and vascular surgery: results from the Patient Safety in Surgery Study. *J Am Coll Surg* 2007;204:1178-87.
8. Campos-Lobato LF, Wells B, Wick E, Pronty K, Kiran R, Remzi F, et al. Predicting organ space surgical site infection with a nomogram. *J Gastrointest Surg* 2009;13:1986-92.
9. Chen LF, Anderson DJ, Kaye KS, Sexton DJ. Validating a 3-point prediction rule for surgical site infection after coronary artery bypass surgery. *Infect Control Hosp Epidemiol* 2010;31:64-8.
10. Fowler VG Jr, O'Brien SM, Muhlbaier LH, Corey GR, Ferguson TB, Peterson ED. Clinical predictors of major infections after cardiac surgery. *Circulation* 2005;112:1358-65.
11. Nashef SA, Roques F, Hammill BG, Peterson ED, Michel P, Grover FL, et al. Validation of European System for Cardiac Operative Risk Evaluation (EuroSCORE) in North American cardiac surgery. *Eur J Cardiothorac Surg* 2002;22:101-5.
12. Nashef SA, Roques F, Michel P, Gauducheau E, Lemeshow S, Salamon R. European system for cardiac operative risk evaluation (EuroSCORE). *Eur J Cardiothorac Surg* 1999;16:9-13.
13. Geubbels EL, Grobbee DE, Vandenbroucke-Grauls CM, Wille JC, de Boer AS. Improved risk adjustment for comparison of surgical site infection rates. *Infect Control Hosp Epidemiol* 2006;27:1330-9.
14. Friedman ND, Bull AL, Russo PL, Leder K, Reid C, Billah B, et al. An alternative scoring system to predict risk for surgical site infection complicating coronary artery bypass graft surgery. *Infect Control Hosp Epidemiol* 2007;28:1162-8.
15. Haley RW, Culver DH, White JW, Morgan WM, Emori TG, Munn VP, et al. The efficacy of infection surveillance and control programs in preventing nosocomial infections in US hospitals. *Am J Epidemiol* 1985;121:182-205.
16. Wiseman JT, Fernandez-Taylor S, Barnes M, et al. Predictors of surgical site infection after hospital discharge in patients undergoing major vascular surgery. *J Vasc Surg*. 2015;62(4):1023-31.
17. Fry DE. *Surgical Site Infection: Pathogenesis and Prevention CME Program*. Medscape from WebMD 2003.
18. Culver DH, Horan TC, Gaynes RP et al. Surgical wound infection rates by wound class, operative procedure, and patient risk index. National Nosocomial Infections Surveillance System. *Am J Med* 1991; 91(3B):152S-157S
19. Aronson WL, McAuliffe MS, Miller K. Variability in the American Society of Anesthesiologists Physical Status Classification Scale. *AANA J* 2003; 71(4):265-274.
20. Culver DH, Horan TC, Gaynes RP et al. Surgical wound infection rates by wound class, operative procedure, and patient risk index. National Nosocomial Infections Surveillance System. *Am J Med* 1991; 91(3B):152S-157S.

21. Barnard B. Prevention of Surgical Site Infections. *Infection Control Today* 2003; 7(4):57-60.
22. American Diabetes Association. Diabetes Statistics. ADA Website 2007. Ref Type: Electronic Citation
23. Pear SM. Relationship of Perioperative Hyperglycemia and Major Infections in Cardiac Surgery Patients. [Dissertation for Ph.D in Epidemiology]. University of Arizona; 2004.
24. Ferrazzi P, Allen R, Crupi G, Reyes I, Parenzan L, Maisonne M. Reduction of infection after cardiac surgery: a clinical trial. *Annals of Thoracic Surgery* 1986; 42(3):321-325.
25. Dronge AS, Perkal MF, Kancir S, Concato J, Aslan M, Rosenthal RA. Long-term glycemic control and postoperative infectious complications. *Arch Surg* 2006; 141(4):375-380.
26. Hoogwerf BJ. Perioperative management of diabetes mellitus: how should we act on the limited evidence? *Cleve Clin J Med* 2006; 73 Suppl 1:S95-S99.
27. Hedblad B, Nilsson P, Engstrom G, Berglund G, Janzon L. Insulin resistance in non-diabetic subjects is associated with increased incidence of myocardial infarction and death. *Diabet Med* 2002; 19(6):470-475.
28. Parsons MW, Barber PA, Desmond PM et al. Acute hyperglycemia adversely affects stroke outcome: a magnetic resonance imaging and spectroscopy study. *Ann Neurol* 2002; 52(1):20-28.
29. Khaodhjar L, McCowen K, Bistran B. Perioperative hyperglycemia, infection or risk? *Curr Opin Clin Nutr Metab Care* 1999; 2(1):79-82
30. Akbari CM, Saouaf R, Barnhill DE, Newman PA, LoGerfo FW, Veves A. Endothelium-dependent vasodilatation is impaired in both microcirculation and macrocirculation during acute hyperglycemia. *J Vasc Surg* 1998; 28(4):687-694.
31. Cheadle WG. Risk factors for surgical site infection. *Surg Infect (Larchmt)* 2006; 7 Suppl 1:S7-11.
32. Dohmen PM. Influence of skin flora and preventive measures on surgical site infection during cardiac surgery. *Surg Infect (Larchmt)* 2006; 7 Suppl 1:S13-S17.
33. Abboud CS, Wey SB, Baltar VT. Risk factors for mediastinitis after cardiac surgery. *Ann Thorac Surg* 2004; 77(2):676-683.
34. Blissmer B, Riebe D, Dye G, Ruggiero L, Greene G, Caldwell M. Health-related quality of life following a clinical weight loss intervention among overweight and obese adults: intervention and 24 month follow-up effects. *Health Qual Life Outcomes* 2006; 4:43
35. Ulicny KS, Jr., Hiratzka LF. The risk factors of median sternotomy infection: a current review. [Review] [162 refs]. *Journal of Cardiac Surgery* 1991; 6(2):338-351.
36. Kagansky N, Berner Y, Koren-Morag N, Perelman L, Knobler H, Levy S. Poor nutritional habits are predictors of poor outcome in very old hospitalized patients. *Am J Clin Nutr* 2005; 82(4):784-791.
37. Üzümcügil O, Doğan A, Yalçınkaya M, Dağtaş MZ, Azar N, Mumcuoğlu E, Kabukçuoğlu YS. The treatment of tibia diaphyseal fractures with locked intramedullary nailing; midterm results. *SETB*. 2009; 43(2): 82-88
38. Nagachinta T, Stephens M, Reitz B, Polk BF. Risk factors for surgicalwound infection following cardiac surgery. *Journal of Infectious Diseases* 1987; 156(6):967-973.
39. Hunt TK, Hopf HW. Wound healing and wound infection. What surgeons and anesthesiologists can do. *Surg Clin North Am* 1997; 77(3):587-606
40. Valentine RJ, Weigelt JA, Dryer D, Rodgers C. Effect of remote infections on clean wound infection rates. *Am J Infect Control* 1986; 14(2):64-67.
41. Stuesse DC, Robinson JH, Durzinsky DS. A late sternal wound infection caused by hematogenous spread of bacteria. *Chest* 1995; 108(6): 1742-1743.
42. Hunter JG, Padilla M, Cooper-Vastola S. Late *Clostridium perfringens* breast implant infection after dental treatment. *Ann Plast Surg* 1996; 36(3):309-312.
43. Edwards LD. The epidemiology of 2056 remote site infections and 1966 surgical wound infections occurring in 1865 patients: a four year study of 40,923 operations at Rush-Presbyterian-St. Luke's Hospital, Chicago. *Ann Surg* 1976; 184(6):758-766.

44. Leape LL, Brennan TA, Laird N et al. The nature of adverse events in hospitalized patients. Results of the Harvard Medical Practice Study II. *N Engl J Med* 1991; 324(6):377-384.
45. Cheadle WG. Risk factors for surgical site infection. *Surg Infect (Larchmt)* 2006; 7 Suppl 1:S7-11.
46. Dohmen PM. Influence of skin flora and preventive measures on surgical site infection during cardiac surgery. *Surg Infect (Larchmt)* 2006; 7 Suppl 1:S13-S17.
47. The Human Body's Non Specific Defense. The skin as an organ of defense, 1-5. 6-30-1999.
48. Fry DE. Surgical Site Infection: Pathogenesis and Prevention CME Program. Medscape from WebMD 2003.
49. McLeod J, Nicolle L, Parker S, Maniar A, McGill M, Yassi A. An outbreak of *Staphylococcus aureus* sternal wound infections in patients undergoing coronary artery bypass surgery. *American Journal of Infection Control* 1991; 19(2):92-97.
50. Mangram AJ, Horan TC, Pearson ML, Silver LC, Jarvis WR. Guideline for prevention of surgical site infection, 1999. Hospital Infection Control Practices Advisory Committee [see comments]. *Infection Control & Hospital Epidemiology* 1999; 20(4):250-278.
51. Mahoney CB, Odom J. Maintaining intraoperative normothermia: a meta-analysis of outcomes with costs. *AANA J* 1999; 67(2): 155-163.
52. Scott EM, Buckland R. A systematic review of intraoperative warming to prevent postoperative complications. *AORN J* 2006; 83(5):1090-13.
53. Frank SM, Fleisher LA, Breslow MJ et al. Perioperative maintenance of normothermia reduces the incidence of morbid cardiac events. A randomized clinical trial. *JAMA* 1997; 277(14): 1127-1134.
54. Leslie K, Sessler DI. Perioperative hypothermia in the high-risk surgical patient. *Best Pract Res Clin Anaesthesiol* 2003; 17(4): 485-498.
55. Unal, Ö , Ateş, M , Dağtaş, M , Ugutmen, E . "Evaluation of axillary nerve integrity and shoulder functions in patients who underwent lateral deltoid splitting approach". *Journal of Surgery and Medicine* 4 (2020): 645-648
56. American Society of PeriAnesthesia Nurses. Clinical Guideline for the Prevention of Unplanned Perioperative Hypothermia. ASPAN Clinical Practice Guidelines . 2002.
57. Moss R. Inadvertent perioperative hypothermia. *AORN J* 1998; 67(2):460-464.