



BÖLÜM 19

POSTOPERATİF KOMPLİKASYONLARI YÖNETİMİ

Berna Buse KOBAL ¹

GİRİŞ

2010 yılında, Amerika Birleşik Devletleri'nde tahmini 51,4 milyon cerrahi prosedür gerçekleştirilmiştir (1). Sağlıklı hastalarda postoperatif komplikasyonlar %0,1'den daha az görülmekte (2), ancak cerrahi yöntem ve hasta risk faktörlerine göre değişmektedir. Sistemik bir çalışma, ameliyat geçiren hastaların %14,4'ünün, hastanede kalış süresini uzatan, taburculukta sakatlığa neden olan veya her ikisini birden yapan tıbbi tedaviden kaynaklanan yaralanma olarak tanımlanan olumsuz bir olay (3) yaşadığını ortaya koymaktadır (4). Bunların %5,2'si potansiyel olarak önlenbilir olarak kabul edilmiştir (3). Hastanede meydana gelen olumsuz olayların %39,6'sına kadar olan kısmı cerrahiyle ilişkilidir (5). Ameliyat hastasının bakımı, sıklıkla ameliyat öncesi risk sınıflandırması ve tıbbi optimizasyon için genellikle bir klinik ziyareti sırasında ameliyat öncesi değerlendirme içerir (6). Preoperatif değerlendirme, bu risk faktörlerinin tanımlanmasını kolaylaştırır ve postoperatif komplikasyonları en aza indirmeye yardımcı olabilir.

Trombotik ve kardiyopulmoner olaylar dahil olmak üzere yaygın cerrahi komplikasyonlar,

bu perioperatif serideki önceki makalelerde ele alınmıştır. Olumsuz kardiyak olaylar majör postoperatif komplikasyonlar olarak kabul edilse de, akut böbrek yetmezliği, postoperatif gastrointestinal komplikasyonlar, anemi, ateş ve deliryum gibi hastalar için önemli morbiditeyi temsil eden, hastanede kalış sürelerinin uzamasına ve bakım maliyetinin artmasına neden olan, ve daha sık görülen postoperatif komplikasyonlar da mevcuttur (7-12). Bu derlemenin amacı, burada bahsi geçen ve çok yaygın görülen postoperatif komplikasyonları ele almaktır.

1. PERİOPERATİF BÖBREK HASTALIĞI OLAN HASTALARIN DEĞERLENDİRİLMESİ VE YÖNETİMİ

Perioperatif böbrek fonksiyon bozukluğu; gerek akut böbrek hasarı (AKI) veya önceden var olan kronik böbrek hastalığı (KBH) olarak, artan morbidite ve mortalite ile ilişkilidir (13-16). AKI, cerrahi vakaların %18 ila %47'si arasında değişen insidans ile ciddi ve nispeten yaygın bir postoperatif komplikasyondur (17). AKI ile ilişkili acil komplikasyonlar arasında sepsis gelişimi, anemi, koagülopati ve mekanik ventilas-

¹ Op. Dr., Tuzla Devlet Hastanesi, Kadın Hastalıkları ve Doğum Bölümü drbernabusekobal@gmail.com

rol oynayabilir ve sınırlı yan etki profili nedeniyle deliryum riski taşıyan hastalar için makul bir seçenektir (108). Ne olursa olsun, potansiyel geri döndürülebilir nedenleri ele alan multimodal bir yaklaşım, hem cerrahi hem de cerrahi olmayan hastalarda deliryum yönetiminin temel taşıdır.

EVE GÖTÜRÜLECEK MESAJLAR

Birçok postoperatif komplikasyon için risk faktörleri, hem hastaya hem de cerrahiye özgü değişkenleri içermektedir. Ameliyat sonrası komplikasyonlar genellikle birden fazla faktörün etkileşiminden kaynaklanmaktadır. Bu risk faktörlerinin bilinmesi, hastaları sık görülen postoperatif komplikasyonlara yatkın hale getiren bu değişkenleri değiştirmek için daha erken tanımlamaya ve müdahaleye yardımcı olabilmektedir. Risk hem hastaya hem de cerrahiye özel olabileceğinden, hafifletme, hastanın cerrahi müdahalesinin tüm aşamalarında bakım ekibi üyeleriyle birlikte multidisipliner bir yaklaşım gerektirmektedir.

KAYNAKLAR

- Centers for Disease Control and Prevention. National Hospital Discharge Survey: 2010. Procedures by selected patient characteristics and age. Hyattsville, MD: US Department of Health and Human Services; 2010.
- Cohn SL. Preoperative evaluation for noncardiac surgery. *Ann Int Med.* 2016;165(11):ITC81-ITC96.
- Anderson O, Davis R, Hanna GB, Vincent CA. Surgical adverse events: a systematic review. *Am J Surg.* 2013;206(2): 253-262.
- Brennan TA, Leape LL, Laird NM, et al. Incidence of adverse events and negligence in hospitalized patients. Results of the Harvard Medical Practice Study I. *N Engl J Med.* 1991; 324(6):370-376.
- de Vries EN, Ramrattan MA, Smorenburg SM, Gouma DJ, Boermeester MA. The incidence and nature of in-hospital adverse events: a systematic review. *Qual Saf Health Care.* 2008;17(3):216-223.
- Edwards AF, Slawski B. Preoperative clinics. *Anesthesiol Clin.* 2016;34(1):1-15.
- Zarbock A, Koyner JL, Hoste EAJ, Kellum JA. Update on peri-operative acute kidney injury. *Anesth Alalg.* 2018;127(5):1236- 1245.
- Cohen MM, Duncan PG, DeBoer DP, Tweed WA. The post-operative interview: assessing risk factors for nausea and vomiting. *Anesth Alalg.* 1994;78(1):7-16.
- American Geriatrics Society Expert Panel on Postoperative Delirium in Older Adults. Postoperative delirium in older adults: best practice statement from the American Geriatrics Society. *J Am Coll Surg.* 2015;220(2):136-148.e1.
- Inouye SK, Westendorp RG, Saczynski JS. Delirium in elderly people. *Lancet.* 2014;383(9920):911-922.
- Shander A, Knight K, Thurer R, Adamson J, Spence R. Prevalence and outcomes of anemia in surgery: a systematic review of the literature. *Am J Med.* 2004;116(suppl 7A):585-695.
- Galicier C, Richet H. A prospective study of postoperative fever in a general surgery department. *Infect Control.* 1985;6(12): 487-490.
- Goren O, Matot I. Perioperative acute kidney injury. *Br J Anaesth.* 2015;115(suppl 2):ii3-ii14.
- Hobson C, Ruchi R, Bihorac A. Perioperative acute kidney injury: risk factors and predictive strategies. *Crit Care Clin.* 2017;33(2):379-396.
- Bihorac A, Yavas S, Subbiah S, et al. Long-term risk of mortality and acute kidney injury during hospitalization after major surgery. *Ann Surg.* 2009;249(5):851-858.
- Ackland GL, Moran N, Cone S, Grocott MP, Mythen MG. Chronic kidney disease and postoperative morbidity after elective orthopedic surgery. *Anesth Alalg.* 2011;112(6):1375- 1381.
- Meersch M, Schmidt C, Zarbock A. Perioperative acute kidney injury: an under-recognized problem. *Anesth Alalg.* 2017; 125(4):1223-1232.
- Chawla LS, Eggers PW, Star RA, Kimmel PL. Acute kidney injury and chronic kidney disease as interconnected syndromes. *N Engl J Med.* 2014;371(1):58-66.
- Mathew A, Devereaux PJ, O'Hare A, et al. Chronic kidney disease and postoperative mortality: a systematic review and meta-analysis. *Kidney Int.* 2008;73(9):1069-1081.
- Zacharias M, Mugawar M, Herbison GP, et al. Interventions for protecting renal function in the perioperative period. *Cochrane Database Syst Rev.* 2013;(9):CD003590.
- Sear JW. Kidney dysfunction in the postoperative period. *Br J Anaesth.* 2005;95(1):20-32.
- Practice guidelines for preoperative fasting and the use of pharmacologic agents to reduce the risk of pulmonary aspiration: application to healthy patients undergoing elective procedures: an updated report by the American Society of Anesthesiologists Task Force on Preoperative Fasting and the Use of Pharmacologic Agents to Reduce the Risk of Pulmonary Aspiration. *Anesthesiology.* 2017;126(3):376-393.
- McLean DJ, Shaw AD. Intravenous fluids: effects on renal outcomes. *Br J Anaesth.* 2018;120(2):397-

- 402.
24. Yunos NM, Bellomo R, Hegarty C, Story D, Ho L, Bailey M. Association between a chloride-liberal vs chloride-restrictive intravenous fluid administration strategy and kidney injury in critically ill adults. *JAMA*. 2012;308(15):1566-1572.
 25. Semler MW, Wanderer JP, Ehrenfeld JM, et al. Balanced crystalloids versus saline in the intensive care unit. The SALT Randomized Trial. *Am J Respir Crit Care Med*. 2017;195(10):1362-1372.
 26. Hartog CS, Natanson C, Sun J, Klein HG, Reinhart K. Concerns over use of hydroxyethyl starch solutions. *BMJ*. 2014; 349:g5981.
 27. Rosenberger C, Rosen S, Heyman SN. Renal parenchymal oxygenation and hypoxia adaptation in acute kidney injury. *Clin Exp Pharmacol Physiol*. 2006;33(10):980-988.
 28. Mikhail MA, Mohabbat AB, Ghosh AK. Perioperative cardiovascular medication management in noncardiac surgery: common questions. *Am Fam Physician*. 2017;95(10):645-650.
 29. Giacoppo D, Capodanno D, Capranzano P, Aruta P, Tamburino C. Meta-analysis of randomized controlled trials of preprocedural statin administration for reducing contrast-induced acute kidney injury in patients undergoing coronary catheterization. *Am J Cardiol*. 2014;114(4):541-548.
 30. Lee JM, Park J, Jeon KH, et al. Efficacy of short-term high-dose statin pretreatment in prevention of contrast-induced acute kidney injury: updated study-level meta-analysis of 13 randomized controlled trials. *PLoS One*. 2014;9(11):e111397.
 31. Cheungpasitporn W, Thongprayoon C, Kittanamongkolchai W, et al. Perioperative effects of statins on the incidence of contrast-induced acute kidney injury: a systematic review and meta-analysis of randomized controlled trials. *Ren Fail*. 2015; 37(4):664-671.
 32. Verdoodt A, Honore PM, Jacobs R, et al. Do statins induce or protect from acute kidney injury and chronic kidney disease: an update review in 2018. *J Transl Int Med*. 2018;6(1): 21-25.
 33. Walsh M, Garg AX, Devereaux P, Argalious M, Honar H, Sessler DI. The association between perioperative hemoglobin and acute kidney injury in patients having noncardiac surgery. *Anesth Analg*. 2013;117(4):924-931.
 34. Gan TJ, Diemunsch P, Habib AS, et al. Consensus guidelines for the management of postoperative nausea and vomiting. *Anesth Analg*. 2014;118(1):85-113.
 35. Hooper VD. SAMBA consensus guidelines for the management of postoperative nausea and vomiting: an executive summary for perianesthesia nurses. *J Perianesth Nurs*. 2015; 30(5):377-382.
 36. Kovac AL. Updates in the management of postoperative nausea and vomiting. *Adv Anesth*. 2018;36(1):81-97.
 37. Apfel CC, Laara E, Koivuranta M, Greim CA, Roewer N. A simplified risk score for predicting postoperative nausea and vomiting: conclusions from cross-validations between two centers. *Anesthesiology*. 1999;91(3):693-700.
 38. Zeinali F, Stulberg JJ, Delaney CP. Pharmacological management of postoperative ileus. *Can J Surg*. 2009;52(2):153-157.
 39. Miedema BW, Johnson JO. Methods for decreasing postoperative gut dysmotility. *Lancet Oncol*. 2003;4(6):365-372.
 40. Bragg D, El-Sharkawy AM, Psaltis E, Maxwell-Armstrong CA, Lobo DN. Postoperative ileus: Recent developments in pathophysiology and management. *Clin Nutr*. 2015;34(3):367-376.
 41. Fitzgerald JE, Ahmed I. Systematic review and meta-analysis of chewing-gum therapy in the reduction of postoperative paralytic ileus following gastrointestinal surgery. *World J Surg*. 2009; 33(12):2557-2566.
 42. Boekema PJ, Samsom M, van Berge Henegouwen GP, Smout AJ. Coffee and gastrointestinal function: facts and fiction. A review. *Scand J Gastroenterol Suppl*. 1999;230:35-39.
 43. Sloots CE, Felt-Bersma RJ, West RL, Kuipers EJ. Stimulation of defecation: effects of coffee use and nicotine on rectal tone and visceral sensitivity. *Scand J Gastroenterol*. 2005;40(7):808-813.
 44. Suri S, Gupta S, Sudhakar PJ, Venkataramu NK, Sood B, Wig JD. Comparative evaluation of plain films, ultrasound and CT in the diagnosis of intestinal obstruction. *Acta Radiol*. 1999;40(4):422-428.
 45. Ludwig K, Enker WE, Delaney CP, et al. Gastrointestinal tract recovery in patients undergoing bowel resection: results of a randomized trial of alvimopan and placebo with a standardized accelerated postoperative care pathway. *Arch Surg*. 2008;143(11):1098-1105.
 46. ASHP therapeutic guidelines on stress ulcer prophylaxis ASHP Commission on Therapeutics and approved by ASHP board of directors on November 14, 1998. *Am J Health Syst Pharm*. 1999;56:347-379.
 47. Guillaumondegui OD, Gunter OL, Bonadies JA, et al. Practice Management Guidelines for Stress Ulcer Prophylaxis. Chicago, IL: Eastern Association for the Surgery of Trauma; 2008.
 48. Krag M, Perner A, Wetterslev J, Moller MH. Stress ulcer prophylaxis in the intensive care unit: is it indicated? A topical systematic review. *Acta Anaesthesiol Scand*. 2013;57(7):835-847.
 49. Krag M, Perner A, Wetterslev J, Wise MP, Hylander Moller M. Stress ulcer prophylaxis versus placebo or no prophylaxis in critically ill patients. A systematic review of randomised clinical trials with meta-analysis and trial sequential analysis. *Intensive Care Med*. 2014;40(1):11-22.
 50. Buckley MS, Park AS, Anderson CS, et al. Impact of a clinical pharmacist stress ulcer prophylaxis management program on inappropriate use in hospitalized patients. *Am J Med*. 2015; 128(8):905-913.

51. Alhazzani W, Alenezi F, Jaeschke RZ, Moayyedi P, Cook DJ. Proton pump inhibitors versus histamine 2 receptor antagonists for stress ulcer prophylaxis in critically ill patients: a systematic review and meta-analysis. *Critical Care Med.* 2013; 41(3):693-705.
52. Azab M, Doo L, Doo DH, et al. Comparison of the hospital-acquired clostridium difşile infection risk of using proton pump inhibitors versus histamine-2 receptor antagonists for prophylaxis and treatment of stress ulcers: a systematic review and meta-analysis. *Gut Liver.* 2017;11(6):781-788.
53. William JH, Danziger J. Magnesium deficiency and proton-pump inhibitor use: a clinical review. *J Clin Pharmacol.* 2016; 56(6):660-668.
54. Jaynes M, Kumar AB. The risks of long-term use of proton pump inhibitors: a critical review. *Ther Adv Drug Saf.* 2018; 10. 2042098618809927.
55. Liu J, Li X, Fan L, et al. Proton pump inhibitors therapy and risk of bone diseases: An update meta-analysis. *Life Sci.* 2019;218: 213-223.
56. Munoz M, Acheson A, Bisbe E, et al. An international consensus statement on the management of postoperative anaemia after major surgical procedures. *Anaesthesia.* 2018; 73(11):1418-1431.
57. Mueller MM, Van Remoortel H, Meybohm P, et al. Patient blood management: recommendations from the 2018 Frankfurt Consensus Conference. *JAMA.* 2019;321(10):983-997.
58. Muñoz M, Acheson AG, Auerbach M, et al. International consensus statement on the peri-operative management of anaemia and iron deficiency. *Anaesthesia.* 2017;72(2):233-247.
59. Wilson MJ, Dekker JW, Bruns E, et al. Short-term effect of pre-operative intravenous iron therapy in colorectal cancer patients with anemia: results of a cohort study. *Transfusion.* 2018;58(3):795-803.
60. Heschl M, Gombotz H, Haslinger-Eisterer B, Hofmann A, Böhler N, Meier J. The efficacy of pre-operative preparation with intravenous iron and/or erythropoietin in anaemic patients undergoing orthopaedic surgery. *Eur J Anaesthesiol.* 2018;35(4):289-297.
61. Carson JL, Terrin ML, Noveck H, et al. Liberal or restrictive transfusion in high-risk patients after hip surgery. *N Engl J Med.* 2011;365(26):2453-2462.
62. Bhaskar B, Dulhunty J, Mullany DV, Fraser JF. Impact of blood product transfusion on short and long-term survival after cardiac surgery: more evidence. *Ann Thorac Surg.* 2012;94(2):460-467.
63. Glance LG, Dick AW, Mukamel DB, et al. Association between intraoperative blood transfusion and mortality and morbidity in patients undergoing non-cardiac surgery. *Anesthesiology.* 2011;114(2):283-292.
64. Fisahn C, Jeyamohan S, Norvell DC, et al. Association between allogeneic blood transfusion and postoperative infection in major spine surgery. *Clin Spine Surg.* 2017;30(7):E988- E992.
65. Tan WS, Lamb BW, Khetrapal P, et al. Blood transfusion requirement and not preoperative anemia are associated with perioperative complications following intracorporeal robot-assisted radical cystectomy. *J Endourol.* 2017;31(2): 141-148.
66. Alameddine AK, Visintainer P, Alimov VK, Rousou JA. Blood transfusion and the risk of atrial fibrillation after cardiac surgery. *J Cardiac Surg.* 2014;29(5):593-599.
67. Carson JL, Guyatt G, Heddle NM, et al. Clinical practice guidelines from the AABB: red blood cell transfusion thresholds and storage. *JAMA.* 2016;316(19):2025-2035.
68. Allonen J, Nieminen MS, Hiippala S, Sinisalo J. Relation of Use of Red Blood Cell Transfusion After Acute Coronary Syndrome to Long-Term Mortality. *Am J Cardiol.* 2018;121(12): 1496-1504.
69. Parker MJ. Iron supplementation for anemia after hip fracture surgery: a randomized trial of 300 patients. *J Bone Joint Surg.* 2010;92(2):265-269.
70. Weatherall M, Maling TJ. Oral iron therapy for anemia after orthopaedic surgery: randomized clinical trial. *ANZ J Surg.* 2004;74(12):1049-1051.
71. Peters F, Ellermann I, Steinbicker AU. Intravenous iron for treatment of anemia in the 3 perisurgical phases: a review and analysis of the current literature. *Anesth Analg.* 2018; 126(4):1268-1282.
72. Netea MG, Kullberg BJ, Van der Meer JW. Circulating cytokines as mediators of fever. *Clin Infect Dis.* 2000;31(suppl 5): S178-S184.
73. Blumstein GW, Andras LM, Seehausen DA, Harris L, Ross PA, Skaggs DL. Fever is common postoperatively following posterior spinal fusion: infection is an uncommon cause. *J Pediatr.* 2015;166(3):751-755.
74. Dauleh MI, Rahman S, Townell NH. Open versus laparoscopic cholecystectomy: a comparison of postoperative temperature. *J R Coll Surg Edinb.* 1995;40(2):116-118.
75. Mayo BC, Haws BE, Bohl DD, et al. Postoperative Fever Evaluation Following Lumbar Fusion Procedures. *Neurospine.* 2018;15(2):154-162.
76. O'Sullivan GH, McIntosh JM, Heffron J. Abnormal uptake and release of Ca²⁺ ions from human malignant hyperthermia-susceptible sarcoplasmic reticulum. *Biochemical Pharmacol.* 2001;61(12):1479-1485.
77. Larach MG, Gronert GA, Allen GC, Brandom BW, Lehman EB. Clinical presentation, treatment, and complications of malignant hyperthermia in North America from 1987 to 2006. *Anesth Analg.* 2010;110(2):498-507.
78. Larach MG, Brandom BW, Allen GC, Gronert GA, Lehman EB. Cardiac arrests and deaths associated with malignant hyperthermia in North America from 1987 to 2006: a report from The North American Malignant Hyperthermia Registry of the Malignant Hyperthermia Association of the United States. *Anesthesiology.* 2008; 108(4):603-611.

80. Garibaldi RA, Burke JP, Dickman ML, Smith CB. Factors pre-disposing to bacteriuria during indwelling urethral catheterization. *N Engl J Med*. 1974;291(5):215-219.
81. Horan TC, Culver DH, Gaynes RP, Jarvis WR, Edwards JR, Reid CR. Nosocomial infections in surgical patients in the United States, January 1986-June 1992. National Nosocomial Infections Surveillance (NNIS) System. *Infect Control Hosp Epidemiol*. 1993;14(2):73-80.
82. Pratt RJ, Pellowe C, Loveday HP, et al. The epic project: developing national evidence-based guidelines for preventing healthcare associated infections. Phase I: guidelines for preventing hospital-acquired infections. Department of Health (England). *J Hosp Infect*. 2001;47(suppl):S3-S82.
83. Delgado-Rodriguez M, Gomez-Ortega A, Sillero-Arenas M, Llorca J. Epidemiology of surgical-site infections diagnosed after hospital discharge: a prospective cohort study. *Infect Control Hosp Epidemiol*. 2001;22(1):24-30.
84. Friedman C, Sturm LK, Chenoweth C. Electronic chart review as an aid to postdischarge surgical site surveillance: increased case finding. *Am J Infect Control*. 2001;29(5):329-332.
85. Pile JC. Evaluating postoperative fever: a focused approach. *Cleve Clin J Med*. 2006;73(suppl 1):S62-S66.
86. European Delirium Association, American Delirium Society. The DSM-5 criteria, level of arousal and delirium diagnosis: inclusiveness is safer. *BMC Med*. 2014;12:141.
87. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. Fifth Edition (DSM-5). Washington, DC: American Psychiatric Association; 2013.
88. Inouye SK, Schlesinger MJ, Lydon TJ. Delirium: a symptom of how hospital care is failing older persons and a window to improve quality of hospital care. *Am J Med*. 1999;106(5): 565-573.
89. Cole MG, Primeau FJ. Prognosis of delirium in elderly hospital patients. *CMAJ*. 1993;149(1):41.
90. Leslie DL, Marcantonio ER, Zhang Y, Leo-Summers L, Inouye SK. One-year health care costs associated with delirium in the elderly population. *Arch Intern Med*. 2008; 168(1):27-32.
91. Bekker AY, Weeks EJ. Cognitive function after anesthesia in the elderly. *Best Pract Res Clin Anaesthesiol*. 2003;17(2):259-272.
92. O'Regan NA, Fitzgerald J, Timmons S, O'Connell H, Meagher D. Delirium: a key challenge for perioperative care. *Int J Surg*. 2013;11(2):136-144.
93. Saczynski JS, Marcantonio ER, Quach L, et al. Cognitive trajectories after postoperative delirium. *N Engl J Med*. 2012;367:30-39.
94. Bruce AJ, Ritchie CW, Blizard R, Lai R, Raven P. The incidence of delirium associated with orthopedic surgery: a meta-analytic review. *Int Psychogeriatr*. 2007;19(2):197-214.
95. Inouye SK, Charpentier PA. Precipitating factors for delirium in hospitalized elderly persons. Predictive model and interrelationship with baseline vulnerability. *JAMA*. 1996;275(11):852-857.
96. Freter S, Dunbar M, Koller K, MacKnight C, Rockwood K. Risk of pre-and post-operative delirium and the delirium elderly at risk (dear) tool in hip fracture patients. *Can Geriatr J*. 2015; 18(4):212-216.
97. Rudolph JL, Jones RN, Levkoff SE, et al. Derivation and validation of a preoperative prediction rule for delirium after cardiac surgery. *Circulation*. 2009;119(2):229-236.
98. Marcantonio ER, Goldman L, Mangione CM, et al. A clinical prediction rule for delirium after elective noncardiac surgery. *JAMA*. 1994;271(2):134-139.
99. Kalisvaart KJ, Vreeswijk R, De Jonghe JF, Van Der Ploeg T, Van Gool WA, Eikelenboom P. Risk factors and prediction of postoperative delirium in elderly hip-surgery patients: Implementation and validation of a medical risk factor model. *J Am Geriatr Soc*. 2006;54(5):817-822.
100. Reddy SV, Irkal JN, Srinivasamurthy A. Postoperative delirium in elderly citizens and current practice. *J Anaesthesiol Clin Pharmacol*. 2017;33(3):291-299.
101. Litaker D, Locala J, Franco K, Bronson DL, Tannous Z. Preoperative risk factors for postoperative delirium. *Gen Hosp Psychiatry*. 2001;23(2):84-89.
102. Sousa G, Mendonça J, Norton M, Pinho C, Santos A, Abelha F. Postoperative delirium in patients with history of alcohol abuse: 1AP5-7. *Eur J Anaesthesiol*. 2014;31:18-19.
103. Young J, Murthy L, Westby M, Akunne A, O'Mahony R. Diagnosis, prevention, and management of delirium: summary of NICE guidance. *BMJ*. 2010;341:c3704.
104. Inouye SK. Prevention of delirium in hospitalized older patients: risk factors and targeted intervention strategies. *Ann Med*. 2000;32(4):257-263.
105. Bush SH, Marchington KL, Agar M, Davis DHJ, Sikora L, Tsang TWY. Quality of clinical practice guidelines in delirium: a systematic appraisal. *BMJ Open*. 2017;7(3):e013809.
106. Nikooie R, Neufeld KJ, Oh ES, et al. Antipsychotics for Treating Delirium in Hospitalized Adults: A Systematic Review. *Ann Intern Med*. 2019;171(7):485-495.
107. Pisani MA, Murphy TE, Araujo KL, Slattum P, Van Ness PH, Inouye SK. Benzodiazepine and opioid use and the duration of ICU delirium in an older population. *Crit Care Med*. 2009; 37(1):177-183.
108. Lonergan E, Luxenberg J, Sastre AA. Benzodiazepines for delirium. *Cochrane Database Syst Rev*. 2009;(4): CD006379.
109. Campbell AM, Axon DR, Martin JR, Slack MK, Molton L, Lee JK. Melatonin for the prevention of postoperative delirium in older adults: a systematic review and meta-analysis. *BMC Geriatr*. 2019;19(1):272.