

Rejyonel Anestezi Periferik Sinir Blokları ve Lokal Anesteziye Eşlik Eden Sedasyon Uygulamaları

Dr. İrfan Güngör

Anestezi uygulamalarının en popüler yöntemlerinden biri olan rejyonel anestezi, gerek teknolojideki gerekse kullanılan ilaçlardaki son gelişmeler sayesinde, GA uygulamalarına göre birçok avantaja sahip olmuştur. Rejyonel anestezi ve analjezi ana başlıklar ile periferik sinir blokları, ganglion ve pleksus blokları, santral sinir blokları (intratekal, epidural) şeklinde gruplandırılabilir. Rejyonel anestezide hastanın bilincini kaybetmemesi ve uyanık kalması, havayolu reflekslerinin korunması, kardiyovasküler ve solunum sistem fonksiyonlarının olumsuz etkilenmemesi, cerrahi girişimlerde kan kaybının ve stres cevabın azalması uygulama sırasında en önemli üstünlüklerdir. Genel anesteziye göre derin venöz tromboz ve pulmoner emboli riski de daha düşüktür. Etkin postoperatif analjezinin sağlanması, hızlı postoperatif iyileşme, aile ile temasın, gıda alımının daha erken olması ise rejyonel anestezinin hasta konforunu artıran avantajlarıdır. Ameliyathane ortam kirliliğinden kaçınma, hastanede kalış süresinde kısalma, düşük işletme maliyeti ise tercih edilmesinde etkili olan diğer üstünlüklerdir (1).

Rejyonel anestezinin kendine has bazı dezavantajları da bulunmaktadır (2). İşlemi yapacak anestezisten bu konuda yeterli teknik bilgi ve deneyime sahip olması zorunludur. Rejyonel anestezinin uygulanabilmesi ve maksimum etkinliğe ulaşması zaman alır. Yapılacak bloğa özgü problemler, postoperatif nörolojik komplikasyon riski, verilen lokal anesteziklere bağlı gelişebilecek sistemik toksisite (LAST) riski önemlidir. Hasta ve cerrahların bu konuda isteksiz oluşu, antikoagulan tedavi alan ve kanama profili bozuk olan hastalara uygulanamaması, inkomplet oluşan bloklarda GA'ya geçilmesi ise yabana atılamayacak sorunlardır. Uygulamada iyi bir hazırlık

Kaynaklar

1. Attri JP, Gupta KK, Khetarpal R. Emerging trends of sedation during regional anaesthesia. *Anaesth Pain and Intensive Care*. 2015;19(4):527-32.
2. Höhener D, Blumenthal S, Borgeat A. Sedation and regional anaesthesia in the adult patient. *Br J Anaesth*. 2008; 100(1):8-16.
3. Shah DM, Darling RC III, Chang BB, et al. Carotid endarterectomy in awake patients: its safety, acceptability and outcome. *J Vasc Surg*. 1994; 19: 1015-20.
4. Matthey PW, Finegan BA, Finucane BT. The public's fears about and perceptions of regional anaesthesia. *Reg Anesth Pain Med*. 2004; 29:96-101.
5. Tryba M. Choices in sedation. *Eur J Anaesthesiol*. 1996; 13(S):22-5.
6. Ben-Shalom I, Abd-El-Khalim H, Ezry J, et al. Midazolam acts synergistically with fentanyl for induction of anaesthesia. *Br J Anaesth*. 1990; 64: 45-7.
7. Murray MJ, DeRuyter ML, Harrison BA. Opioids and benzodiazepines. *Crit Care Clin*. 1995;11: 849-73.
8. Practice guidelines for sedation and analgesia by non-anesthesiologists: A report by the American Society of Anesthesiologists Task Force on Sedation and Analgesia by Non-Anesthesiologists. *Anesthesiology*. 1996; 84: 459-71.
9. Hu P, Harmon D, Frizelle H. Patient comfort during regional anesthesia. *J Clin Anesth*, 2007; 19(1):67-74.
10. Rautoma P, Santanen U, Luurila H, et al. Preoperative diclofenac is a useful adjunct to spinal anaesthesia for day-case varicose vein repair. *Can J Anaesth*, 2001; 48: 661-4.
11. Gadiyar V, Gallagher TM, Crean PM, et al. The effect of a combination of rectal diclofenac and caudal bupivacaine on postoperative analgesia in children. *Anesthesia*, 50: 820-2, 1995.
12. Lim NL, Lo WK, Chong JL, et al. Single dose diclofenac suppository reduces post-Cesarean PCEA requirements. *Can J Anaesth*, 48: 383-6, 2001.
13. Dahl V, Hagen IE, Sveen AM, et al. High-dose diclofenac for postoperative analgesia after elective caesarean section in regional anaesthesia. *Int J Obstet Anesth*. 2002; 11: 91-4.
14. Cvachovec K. The role of sedation during regional anaesthesia *Eur J Anaesthesiol*. 1996; 9(1):15-21.
15. Charlton JE. The management of regional anaesthesia. In: Wildsmith JA, Armitage EN, eds. *Principles and Practice of Regional Anaesthesia*. Edinburgh: Churchill Livingstone, 37-61, 1987.
16. Mackenzie N. Sedation during regional anaesthesia: indications, advantages and methods. *Eur J Anaesthesiol* 1996; (S13):2-7; discussion 22-5.
17. Checketts MR, Alladi R, Ferguson K, et al, Association of Anaesthetists of Great Britain and Ireland. Recommendations for standards of monitoring during anaesthesia and recovery 2015: Association of Anaesthetists of Great Britain and Ireland. *Anesthesia*. 2016; 71(1):85-93.
18. Parbrook GD, Still DM, Parbrook EO. Comparison of IV sedation with midazolam and inhalational sedation with isoflurane in dental outpatients. *Br J Anaesth*. 1989; 63: 81-6.
19. Ibrahim AE, Ghoneim MM, Kharasch ED et al, Speed of recovery and side-effect profile of sevoflurane sedation compared with midazolam. *Anesthesiology*, 2001; 94: 87-94.

20. Hoerauf KH, Hartmann T, Zavrski A et al, Occupational exposure to sevoflurane during sedation of adult patients. *Int Arch Occup Environ Health*, 1999; 72: 174-77.
21. Mackenzie N. Intravenous anaesthesia and sedation for regional anaesthesia. In: Kay B, ed. *Total Intravenous Anaesthesia*. Amsterdam: Elsevier, pp:285-321, 1991
22. Mackenzie N, Grant IS. Comparison of propofol with methohexitone in the provision of anaesthesia for surgery under regional blockade. *Br J Anaesth.* 1985; 57: 1167-72.
23. Lee TW, Loewenthal AE, Strachan JA, Todd BD. Pain during injection of propofol. The effect of prior administration of thiopentone. *Anaesthesia*. 1994; 49: 17-18.
24. White PF, Way WL, Trevor AJ. Ketamine-its pharmacology and therapeutic uses. *Anesthesiology* 1982;56: 119-36.
25. Salehi E. Schlafinduktion mit Midazolam während der regionalanästhesie. *Anaesthetist*, 31: A232, 1985
26. Whitwam JG, Al Khudhairi D, McCloy RF. Comparison of midazolam and diazepam in doses of comparable potency during gastroscopy. *Br J Anaesth.* 1983; 55: 773-7.
27. Barker I, Butchart DGM, Gibson J, Lawson JIM, Mackenzie N. IV sedation for conservative dentistry. A comparison of midazolam and diazepam. *Br J Anaesth.* 1986;58: 371-7.
28. Ekin A, Donmez F, Taspinar V, Dikmen B. Patient-controlled sedation in orthopedic surgery under regional anesthesia: a new approach in procedural sedation. *Rev Bras Anestesiol.* 2013; 63: 410-4.
29. Patki A, Shelgaonkar VC. A comparison of equisedative infusions of propofol and midazolam for conscious sedation during spinal anesthesia-a prospective randomized study. *J Anaesthesiol Clin Pharmacol.* 2011;27:47-53.
30. Rodrigo MR, Jonsson E. Conscious sedation with propofol. *Br Dent J.* 1989; 166: 75-80.
31. Servin FS, Raeder JC, Merle JC, Wattwil M, Hanson AL, Lauwers MH et al. Remifentanil sedation compared with propofol during regional anesthesia. *Acta Anaesthesiol Scand.* 2002;46: 309-15.
32. Smith I, Monk TG, White PF, Ding Y. Propofol infusion during regional anesthesia: sedative, amnesic, and anxiolytic properties. *Anesth Analg.* 1994; 79: 313-9.
33. Dertwinkel R, Nolte H. Continuous sedation for regional anesthesia with propofol (Diprivan) and midazolam (Dormicum). *Reg Anaesth.* 1988;11: 84-91.
34. Kurdi MS, Theerth KA, Deva RS. Ketamine: Current applications in anesthesia, pain, and critical care. *Anesth Essays Res.* 2014; 8:283-90.
35. Badrinath S, Avramov MN, Shadrick M, Witt TR, Ivankovich AD. The use of a ketamine-propofol combination during monitored anesthesia care. *Anesth Analg.* 2000; 90: 858-62.
36. Frizelle HP, Duranteau J, Samii K. A comparison of propofol with a propofol-ketamine combination for sedation during spinal anesthesia. *Anesth Analg.* 1997; 84: 1318-22.
37. Bridenbaugh PO. Patient management for neural blockade. In: Cousins MJ, Bridenbaugh PO, eds. *Neural Blockade in Clinical Anesthesia and Management of Pain*, 2nd edn. Philadelphia: Lippincott pp: 199-210, 1988
38. Lauwers MH, Vanlersberghe C, and Camu F. Comparison of remifentanil and propofol infusions for sedation during regional anaesthesia. *Reg Anesth Pain Med.* 1998; 23: 64-70.
39. Mingus ML, Monk TG, Gold MI, Jenkins W, and Roland C. Remifentanil versus propofol as adjuncts to regional anaesthesia. *J Clin Anesth.* 1998; 10: 46-53.

40. Kapila A, Glass PS, Jacobs JR et al. Measured context-sensitive half-times of remifentanil and alfentanil. *Anesthesiology*. 1995; 83: 968-75.
41. Egan TD, Lemmens HJ, Fiset P et al. The pharmacokinetics of the new short-acting opioid remifentanil (GI87084B) in healthy adult male volunteers. *Anesthesiology*. 1993; 79: 881-92.
42. Moerman AT, Struys MM, Vereecke HE, Herregods LL, De Vos MM, and Mortier EP. Remifentanil used to supplement propofol does not improve quality of sedation during spontaneous respiration. *J Clin Anesth*. 2004; 16: 237-43.
43. Servin F, Desmonts JM, and Watkins WD. Remifentanil as an analgesic adjunct in local/ regional anaesthesia and in monitored anaesthesia care. *Anesth Analg*. 1999; 89: 28-32.
44. Avramov MN, Smith I, and White PF. Interactions between midazolam and remifentanil during monitored anaesthesia care. *Anesthesiology*. 1996; 85: 1283-89.
45. Liu J, Singh H, White PF. Electroencephalographic bispectral index correlates with intraoperative recall and depth of propofol-induced sedation. *Anesth Analg*. 1997; 84: 185-9.
46. Farag E, Argalious M, Abd-Elsayed A, Ebrahim Z, Doyle DJ. Dexmedetomidine in Anesthesia and Intensive Care: A review. *Curr Pharm Des*. 2012; 18(38):6257-65.
47. Mizrak A, Gul R, Ganidagli S, Karakurum G, Keskinkilic G, Oner U. Dexmedetomidine premedication of outpatients under IVRA. *Middle East J Anaesthesiol*. 2011; 21(1):53-60.
48. Hong JY, Kim WO, Yoon Y, Choi Y, Kim SH, Kil HK. Effects of intravenous dexmedetomidine on low-dose bupivacaine spinal anaesthesia in elderly patients. *Acta Anaesthesiol Scand*. 2012; 56(3):382-7.
49. Sener M. Spinal anesthesia is a valid alternative to other anesthetic approaches for children with neuromuscular disease, and dexmedetomidine sedation is a safe method for pediatric regional anesthesia. *Paediatr Anaesth*. 2012; 22(6):597-8.
50. Choon L, Bong, Angela S. H. Yeo, Teddy Fabila & Josephine S. K. Tan. A pilot study of dexmedetomidine sedation and caudal anesthesia for inguinal hernia repair in infants. *Pediatric Anesthesia*. 2016; 26: 621-7.
51. Beer GM, Spicher I, Seifert B, Emanuel B, Kompatscher P, Meyer VE. Oral premedication for operations on the face under local anesthesia: a placebo-controlled double-blind trial. *Plast Reconstr Surg*. 2001; 108: 637-43.
52. Filos KS, Patroni O, Goudas LC, Bosas O, Kassaras A, Gartaganis S. A dose-response study of orally administered clonidine as premedication in the elderly: evaluating hemodynamic safety. *Anesth Analg*. 1993; 77: 1185-92.
53. Coskuner I, Tekin M, Kati I. Effects of dexmedetomidine on the duration of anesthesia and wakefulness in bupivacaine epidural block. *Eur J Anaesthesiol*. 2007; 24: 535-40.
54. Shah PJ, Dubey KP, Sahare KK, Agrawal A. Intravenous dexmedetomidine versus propofol for intraoperative moderate sedation during spinal anesthesia: A comparative study. *J Anaesthesiol Clin Pharmacol*. 2016; 32(2):245-9.
55. Tryba M, Zenz M, Pern U. Clonidine suppresses post-epidural shivering-a double blind study. *Anesthesiology*. 1990; 73: A788.
56. Urquhart ML, White PF. Comparison of sedative infusions during regional anesthesia-methohexitol, etomidate, and midazolam. *Anesth Analg*. 1989; 68: 249-54.
57. White PF, Negus JB. Sedative infusions during local and regional anesthesia: a comparison of midazolam and propofol. *J Clin Anesth*. 1991; 3: 32-9.

58. Bailey PL, Pace NL, Ashburn MA, Moll JWB, East KA, Stanley TH. Frequent hypoxemia and apnea after sedation with midazolam and fentanyl. *Anesthesiology*. 1990; 73: 826-30.
59. Dollery C. Therapeutic Drugs, 1st edn. Edinburgh: Churchill Livingstone, 1991.
60. Rosenberg MK, Eaymond CH, Bridge PD. Comparison of midazolam/ketamine with methohexitol for sedation during peribulbar block. *Anesth Analg*, 81: 173-4, 1995
61. Kulka P, Tryba M, Szczepanski U, Zenz M. Beeinflußt Clonidin den hypnotischen Effekt von Propofol? *Anaesthesia*. 1993; 42:630-7.
62. Mackenzie N, Grant IS. Propofol for intravenous sedation. *Anaesthesia*. 1987; 42: 3-6.
63. Nolte H, Dertwinkel R. Propofol for sedation during epidural anaesthesia. *Anaesthesia*. 1988; 43: 115-6.
64. Patterson KW, Casey PB, Murray JP, O'Boyle CA, Cunningham AJ. Propofol sedation for out-patient upper gastrointestinal endoscopy: comparison with midazolam. *Br J Anaesth*. 1991; 67: 108-11.
65. Kenny GN. Patient sedation: technical problems and developments. *Eur J Anaesthesiol*. 1996; 13: 18.
66. White M, Kenny GN. Intravenous propofol anaesthesia using a computerized infusion system. *Anesthesia*. 1990; 45: 204-9.
67. Osborne GA, Rudkin GE, Jarvis DA, Young IG, Barlow J, Leppard PI. Intra-operative patient-controlled sedation and patient attitude to control. A crossover comparison of patient preference for patient-controlled propofol and propofol by continuous infusion. *Anesthesia*. 1994; 49: 287-92.
68. Rodrigo MR, Irwin MG, Tong CK, Yan SY. A randomized crossover comparison of patient-controlled sedation and patient-maintained sedation using propofol. *Anesthesia*. 2003; 58: 333-8.
69. Gurudatt C. Sedation in intensive care unit patients: Assessment and awareness. *Indian J Anaesth*. 2011; 55:553-5.
70. Nemethy M, Paroli L, Williams-Russo PG, Blanck TJ. Assessing sedation with regional anesthesia: inter-rater agreement on a modified Wilson sedation scale. *Anesth Analg*. 2002; 94: 723-8.
71. Sandler NA, Sparks BS. The use of bispectral analysis in patients undergoing intravenous sedation for third molar extractions. *J Oral Maxillofac Surg*. 200; 58: 364-8.
72. Ibrahim AE, Taraday JK, Kharasch ED. Bispectral index monitoring during sedation with sevoflurane, midazolam, and propofol. *Anesthesiology*. 2001; 95: 1151-9.
73. Pollock JE, Neal JM, Liu SS, Burkhead D, Polissar N. Sedation during spinal anesthesia. *Anesthesiology*. 2000; 93:728-34.
74. Hans P, Dewandre PY, Brichant JF, Bonhomme V. Comparative effects of ketamine on Bispectral Index and spectral entropy of the electroencephalogram under sevoflurane anesthesia. *Br J Anaesth*. 2005; 94:336-40.
75. Ge SJ, Zhuang XL, Wang YT, Wang ZD. Changes in the rapidly extracted auditory evoked potentials index and the bispectral index during sedation induced by propofol or midazolam under epidural block. *Br J Anaesth*. 2002; 89: 260-4.
76. Amornyotin S, Chalayonnawin W, Kongphlay S. Deep sedation for endoscopic retrograde cholangiopancreatography: a comparison between clinical assessment and Narcotrend monitoring. *Med Devices: Evid Res*. 2002; 4: 43-9.
77. Lee D, Henderson A, Shum D. The effect of music on preprocedure anxiety in Hong Kong Chinese day patients. *J Clin Nurs*. 2004; 13(3): 297-303.

78. Kliempt P, Ruta D, Ogston S, Landeck A, Martay K. Hemispheric-synchronisation during anaesthesia: a double-blind randomised trial using audiotapes for intra-operative nociception control. *Anesthesia*, 54(8): 769-73, 1999.
79. Menegazzi JJ, Paris PM, Kersteen CH, Flynn B, Trautman DE. A randomized, controlled trial of the use of music during laceration repair. *Emerg Med*. 1991; 20(4): 348-50.
80. Myskja A, Lindbaek M. How does music affect the human body? *Tidsskr Nor Laegeforen*. 2000; 120(10):1182-5.
81. Good M, Stanton-Hicks M, Grass JA, Cranston Anderson G, Choi C, Schoolmeesters LJ, et al. Relief of postoperative pain with jaw relaxation, music and their combination. *Pain*. 1999; 81(1-2):163-72.
82. Good M, Anderson GC, Stanton-Hicks M, Grass JA, Makii M. Relaxation and music reduce pain after gynecologic surgery. *Pain Manag Nurs*. 2002; 3(2): 61-70.
83. Carolina L, Pierre D, Michel G, Yvan G. Music decreases sedative requirements during spinal anesthesia *Anesth Analg*. 2001; 93: 912-6.
84. Marc E. Koch, Zeev N. Kain, Chakib Ayoub, Stanley H. Rosenbaum, The sedative and analgesic sparing effect of music. *Anesthesiology*, 1998; 89(2):300-6.
85. Bansal P, Kharod U, Patel P, Sanwatsarkar S, Patel H, Kamat H. The Effect Of Music Therapy On Sedative Requirements And Haemodynamic Parameters In Patients Under Spinal Anaesthesia; A Prospective Study. *Journal of Clinical and Diagnostic Research*. 2010; 4:2782-87.
86. Kaul TK, Ahuja N, Avtar S. Does music reduce sedative requirement under regional anesthesia? *J Anaes Clin Pharmac*. 2003; 19(2):203-6.
87. Zhang XW, Fan Y, Manyande A, Tian YK, Yin P. Effects of music on target-controlled infusion of propofol requirements during combined spinal–epidural anaesthesia. *Anesthesia*. 2005; 60: 990-94.
88. Nilsson U, Rawal N, Unestahl LE, Zetterberg C, Unosson M. Improved recovery after music and therapeutic suggestions during general anesthesia: a double-blind randomized controlled trial. *Acta Anaesthesiol Scand*. 2001; 45(7): 812-7.
89. Nilsson U, Rawal N, Unosson M. A comparison of intra-operative or postoperative exposure to music--a controlled trial of the effects on postoperative pain. *Anesthesia*. 2003; 58(7):699-703.
90. Peretz B, Bimstein E. The use of imagery suggestions during administration of local anaesthetic in pediatric dental patients. *ASDC J Dent Child*. 2000; 67:263-7.
91. Faymonville ME, Meurisse M, Fissette J. Hypnosedation: a valuable alternative to traditional anaesthetic techniques. *Acta Chir Belg*. 1999; 99:141-6.
92. Hermes D, Trubger D, Hakim SG, et al. Perioperative use of medical hypnosis. Therapy options for anaesthetists and surgeons. *Anaesthetist*. 2004; 53:326-33.