

Nörocerrahide Sedasyon

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Nörocerrahi alanında, teknolojideki ilerlemelerle paralel olarak yeni tekniklerin kullanımı son yıllarda artmıştır. Fonksiyonel cerrahi konvansiyonel invaziv cerrahi yöntemlere kıyasla morbidite oranı, intraoperatif kanama ve hastanede kalış süresini azalttığı için son yıllarda daha fazla kullanım alanı bulmuştur. Fonksiyonel nörocerrahi, SSS'de yapısal ve anatomik bir bozukluk olsun ya da olmasın, fonksiyonel bir anormalliğin (hareket bozuklukları, kronik ağrılar, psişik problemler gibi) olduğu durumlarda uygulanan girişimlerdir. Bu işlemler için uygulanan anestezi yöntemleri de farklılık göstermektedir. Nörocerrahideki girişimlerin çok büyük çoğunluğu GA gerektiren uygulamalar olup, sedasyonun uygulandığı alanlar kısıtlıdır. Ancak sedasyon uygularken de amaç nörocerrahideki GA uygulamalarında olduğu gibi cerrahiye uygun ortamın sağlanması, beyin perfüzyonunun korunması, otheregülasyonun ve oksijenasyonun sürdürülmesi, hızlı ve nörolojik muayeneye izin veren bir derlenme sağlanmasıdır.

Nörocerrahinin uygulanma alanlarına göre sedasyon altında yapılan cerrahi girişimler öncelikle iki alt başlıkta toplanabilir;

1. Kraniyal girişimler: Stereotaktik ve fonksiyonel nörocerrahi
2. Spinal girişimler

1. KRANIYAL GİRİŞİMLERDE SEDASYON

► Stereotaktik ve Fonksiyonel Nörocerrahi

Nörofizyolog ve beyin cerrahı Sir Victor Alexander Haden Horsley (1857–1916) ve matematikçi Robert Henry Clarke (1850–1926) ilk stereotaktik cihazı geliştirmiş, stereotaksi terimini de ilk olarak kullanmışlardır (1,2). Kelimenin kökeni Latince olup, stereo (3 boyutlu) ve taxic (düzenleme)

Kaynaklar

1. Cif L, Hariz M. Seventy years of pallidotomy for movement disorders. *Mov Disord.* 2017; 32: 972-982.
2. Serletis D, Pait TG. Early craniometric tools as a predecessor to neurosurgical stereotaxis. *J Neurosurg.* 2016; 124:1867-1874.
3. Poon CCM, Irwin MG. Anaesthesia for deep brain stimulation and in patients with implanted neurostimulator devices. *Br J Anaesth.* 2009; 103:152-165.
4. Erickson KM, Cole DJ. Anesthetic considerations for awake craniotomy for epilepsy and functional neurosurgery. *Anesthesiol Clin.* 2012; 30:241-268.
5. Nelson P, Nelson JA, Chen AJ, Kofke WA. An alternative position for the BIS-Vista montage in frontal approach neurosurgical cases. *J Neurosurg Anesthesiol.* 2013; 25:135-142.
6. Lee SY, Kim YS, Lim BG, et al. Comparison of bispectral index scores from the standard frontal sensor position with those from an alternative mandibular position. *Korean J Anesthesiol.* 2014; 66: 267-273.
7. Akavipat P, Hungsawanich N, Jansin R. Alternative placement of bispectral index electrode for monitoring depth of anesthesia during neurosurgery. *Acta Med Okayama.* 2014; 68:151-155.
8. Girvin JP. Neurosurgical considerations and general methods for craniotomy under local anesthesia. *Int Anesthesiol Clin.* 1986; 24: 89-114.
9. Pinosky, ML, Fishman, RL, Reeves, ST. The effect of bupivacaine skull block on the hemodynamic response to craniotomy. *Anesth Analg.* 1996; 83:1256-1261.
10. Osborn I, Sebeo J. Scalp block during craniotomy: a classic technique revisited. *J Neurosurg Anesthesiol.* 2010; 22:187-194.
11. Guilfoyle MR, Helmy A, Duane D, Hutchinson PJ. Regional scalp block for postcraniotomy analgesia: a systematic review and meta-analysis. *Anesth Analg.* 2013; 116:1093-1102.
12. Piccioni F, Fanzio M. Management of anesthesia in awake craniotomy. *Minerva Anesthesiol.* 2008; 74:393-408.
13. Riquin E, Martin P, Duverger P, Menei P, Delion M. A case of awake craniotomy surgery in an 8-year-old girl. *Childs Nerv Syst.* 2017; 33:1039-1042.
14. Schulz U, Keh D, Barner C, Kaisers U, Boemke W. Bispectral index monitoring does not improve anesthesia performance in patients with movement disorders undergoing deep brain stimulating electrode implantation. *Anesth Analg.* 2007; 104:1481-1487.
15. Poon CCM, Irwin MG. Anaesthesia for deep brain stimulation and in patients with implanted neurostimulator devices. *Br J Anaesth.* 2009; 103:152-165.
16. Grant R, Gruenbaum SE, Gerrard J. Anaesthesia for deep brain stimulation: a review. *Curr Opin Anaesthesiol.* 2015; 28: 505-510.
17. Fabregas N, Rapado J, Gambus PL, et al. Modeling of the sedative and airway obstruction effects of propofol in patients with Parkinson disease undergoing stereotactic surgery. *Anesthesiology.* 2002; 97:1378-1386.
18. Lobo F, Beiras A. Propofol and remifentanyl effect-site concentrations estimated by pharmacokinetic simulation and bispectral index monitoring during craniotomy with intraoperative awakening for brain tumor resection. *J Neurosurg Anesthesiol.* 2007; 19:183-189.

19. Rozet I. Anesthesia for functional neurosurgery: the role of dexmedetomidine. *Curr Opin Anaesthesiol.* 2008; 21:537–543.
20. Suero Molina E, Schipmann S, Mueller I, et al. Conscious sedation with dexmedetomidine compared with asleep-awake-sleep craniotomies in glioma surgery: an analysis of 180 patients. *J Neurosurg.* 2018; 12:1-8.
21. J, Doyle W, Bekker A. Awake craniotomy with dexmedetomidine in pediatric patients. *J Neurosurg Anesthesiol.* 2003; 15:263-266.
22. Sheshadri V, Chandramouli BA. Pediatric awake craniotomy for seizure focus resection with dexmedetomidine sedation-a case report. *J Clin Anesth.* 2016; 32:199-202.
23. Ard JL Jr, Bekker AY, Doyle WK. Dexmedetomidine technical note. *Surg Neurol.* 2005; 63:114-116.
24. Rozet I, Muangman S, Vavilala MS, et al. Clinical experience with dexmedetomidine for implantation of deep brain stimulators in Parkinson's disease. *Anesth Analg.* 2006; 103:1224–1228.
25. Lin N, Han R, Zhou J, Gelb AW. Mild sedation exacerbates or unmasks focal neurologic dysfunction in neurosurgical patients with supratentorial brain mass lesions in a drug-specific manner. *Anesthesiology.* 2016; 124:598-607.
26. Goettel N, Bharadwaj S, Venkatraghavan L, et al. Dexmedetomidine vs propofol-remifentanyl conscious sedation for awake craniotomy: prospective randomized controlled trial. *Br J Anaesth.* 2016; 116:811-821.
27. Prontera A, Baroni S, Marudi A, et al. Awake craniotomy anesthetic management using dexmedetomidine, propofol, and remifentanyl. *Drug Des Devel Ther.* 2017; 11:593-598.
28. Hippard HK, Watcha M, Stocco AJ, Curry D. Preservation of microelectrode recordings with non-gABAergic drugs during deep brain stimulator placement in children. *J Neurosurg Pediatr.* 2014; 14:279–286.
29. Athiraman U, Rich KM. CON: Deep brain stimulator insertion for functional neurosurgery under general anesthesia. 2017; 29:350-351.
30. Furmaga H, Park HJ, Cooperrider J, et al. Effects of ketamine and propofol on motor evoked potentials elicited by intracranial microstimulation during deep brain stimulation. *Front Syst Neurosci.* 2015; 8:89.
31. Chakrabarti R, Ghazanwy M, Tewari A. Anesthetic challenges for deep brain stimulation: a systematic approach. *North Am J Med Sci.* 2014; 6:359-369.
32. Venkatraghavan L, Manninen P, Mak P, et al. Anesthesia for functional neurosurgery: review of complications. *J Neurosurg Anesthesiol.* 2006; 18:64-67.
33. Eseonu CI, ReFaey K, Garcia O, et al. Awake craniotomy anesthesia: A comparison of the monitored anesthesia care and asleep-awake-asleep techniques. *World Neurosurg.* 2017; 104:679-686.
34. Stevanovic A, Rossaint R, Veldeman M, Bilotta F, Coburn M. Anaesthesia management for awake craniotomy : Systematic review and meta-analysis. *PLoS One.* 2016; 6:11(5).
35. Prabhakar H, Mahajan C, Kapoor I. Anesthesia for minimally invasive neurosurgery. *Curr Opin Anaesthesiol.* 2017; 30:546-550.
36. Tuncalı B, Altınel F. Lokal anestezi ve intravenöz sedoanaljezi altında perkutan vertebroplasti ve balon kifoplasti uygulanan olguların retrospektif olarak değerlendirilmesi. *Anestezi Dergisi.* 2017; 25:65-69.

37. Bonnard E, Foti P, Kastler A, Amoretti N. Percutaneous vertebroplasty under local anaesthesia: feasibility regarding patients' experience. *Eur Radiol.* 2017; 27:1512-1516.
38. Lee JM, Lee SK, Lee SJ, et al. Comparison of remifentanyl with dexmedetomidine for monitored anaesthesia care in elderly patients during vertebroplasty and kyphoplasty. *J Int Med Res.* 2016; 44:307-316.
39. Mohr M, Pillich D, Kirsch M, et al. Percutaneous balloon kyphoplasty with the patient under intravenous analgesia and sedation: a feasibility study. *AJNR Am J Neuro-radiol.* 2011 ;32:649-653.
40. Oksar M. Sedation for percutaneous endoscopic lumbar discectomy. *The Scientific World Journal.* 2016:8767410.