

УДК 616-089.5:053.2

Chichahov D.A.

Standartizing of procedural sedation in pediatric practice

The number of diagnostic and therapeutic procedures done outside of the operating room and the intensive care unit has increased substantially in recent years. In parallel, the management of acute pain and anxiety in children undergoing therapeutic and diagnostic procedures has developed considerably in the past two decades. The primary goal of procedural sedation and analgesia is the safe and efficacious control of emotional distress and pain. The availability of non-invasive monitoring, short-acting opioids and sedatives has broadened the possibilities of sedation and analgesia in children in diverse settings. While most of these procedures themselves pose little risk to the child, the administration of sedation or analgesia may add substantial risk to the patient. This new guidelines the current status of sedation and analgesia for invasive and noninvasive procedures in children providing an evidencebased approach to several topics of importance, including patient assessment, personnel requirements, equipment, monitoring, and drugs.

Keywords: anesthesiology, sedation, children.

References

1. Александров А.Е., Добровольский А.Э., Рябцев М.С. Использование мидазолама в педиатрической практике //Вопросы современной педиатрии.-2007.-Т.6.-№4.-С.102-105.
2. Острейков И.Ф., Пивоваров С.А., Миленин В.В. и др. Пероральная премедикация мидазоламом у детей в однодневном хирургическом стационаре //Анестезиология и реаниматология.-1999.-№3.-С.12-14.
3. American Academy of Pediatrics. Guidelines for monitoring and management of pediatric patients during and after sedation for diagnostic and therapeutic procedures: addendum. //Pediatrics.-2000;110:836–838.
4. American Academy of Pediatrics, Committee on Drugs. Guidelines for monitoring and management of pediatric patients during and after sedation for diagnostic and therapeutic procedures.//Pediatrics.-1992;89:1110–1115.
5. American College of Emergency Physicians. Clinical policy: procedural sedation and analgesia in the emergency department. //Ann. Emerg. Med.-2005;45:177–196.

6. American Society of Anesthesiologists (1994) Guidelines for nonoperating room anesthetizing locations. Доступно: <http://www.asahq.org/Standards/14.html>
7. Annequin D., Carbajal R., Chauvin P., Gall O. et al. Fixed 50% nitrous oxide mixture for painful procedures: A French survey. //Pediatrics/-2000;105:e47.
8. Bauman L.A., Cannon M., McCloskey J. et al. Unconscious sedation in children: a prospective multi-arm clinical trial. //Paed. Anaesth.-2002;12:674–679.
9. Bergman S.A. Ketamine: review of its pharmacology and its use in pediatric anesthesia. //Anesth. Prog.-1999;46:10–20.
10. Blumer J.L. Clinical pharmacology of midazolam in infants and children. //Clin. Pharmacokinet.-1998;35:37–47.
11. Cote C.J., Karl H.W., Notterman D.A. et al. Adverse sedation events in pediatrics: analysis of medications used for sedation. //Pediatrics/-2000;106:633–644.
12. Cote C.J., Notterman D.A., Karl H.W. et al. Adverse sedation events in pediatrics: a critical incident analysis of contributing factors. //Pediatrics.-2000;105:805–814.
13. D'Agostino J., Terndrup T.E. Chloralhydrate for sedation of children for neuroimaging: a randomised clinical trial. //Pediatr. Emerg. Care.-2000;16:1–4.
14. Drummond G.B. Comparison of sedation with midazolam and ketamine: effects on airway muscle activity. //Brit. J. Anaesth.-1996;76:663–667.
15. Egan T.D., Lemmens H.J., Fiset P. et al. The pharmacokinetics of the new shortacting opioid remifentanyl (GI87084B) in healthy male volunteers. //Anesthesiology/-1993;79:881–892.
16. Funk W., Hoerauf K., Held P., Taeger K. Anaesthesie zur Magnetresonanztomographie bei Neonaten, Säuglingen und Kleinkindern. //Radiologe.-1997;37:159–164.
17. Gottschling S., Meyer S., Krenn T. et al. Effects of short-term propofol administration on pancreatic enzymes and triglyceride levels in children. //Anaesthesia.-2005;60:660–663.
18. Gottschling S., Meyer S., Krenn T. et al. Propofol versus midazolam/ketamine for procedural sedation in pediatric oncology. //J. Pediatr. Hematol. Oncol.-2005;27:471–476.
19. Green S.M., Johnson N.E. Ketamine sedation for pediatric procedures: Part 2, Review and implications. //Ann. Emerg. Med.-1990;19:1033–1046.
20. Green S.M., Krauss B. Procedural sedation terminology: moving beyond “conscious sedation”. //Ann. Emerg. Med.-2002;39:433–435.
21. Haeseler G., Zuzan O., Köhn G. et al. Anaesthesia with midazolam and S-(+)-ketamine in spontaneously breathing paediatric patients during magnetic resonance imaging.//Paed. Anaesth.-2000;10:513–519.

22. Hain R.D., Campbell C. Invasive procedures carried out in conscious children: contrast between North American and European paediatric oncology centres. //Arch. Dis. Child.-2001;85:12-15.
23. Heistein L.C., Ramaciotti C., Scott W.A. et al. Chloral hydrate sedation for pediatric echocardiography: physiologic responses, adverse events, and risk factors. //Pediatrics.-2006;117:e434–e441.
24. Hertzog J.H., Dalton H.J., Anderson B.D. et al. Prospective evaluation of propofol anesthesia in the pediatric intensive care unit for elective oncology procedures in ambulatory and hospitalized children. //Pediatrics.-2000;106:742–747.
25. Hoffman G.M., Nowakowski R., Troshynski T.J. et al. Risk reduction in pediatric procedural sedation by application of an American of Pediatrics/American Society of Anesthesiologists process model. //Pediatrics.-2002;109:236-243.
26. Hunter A.S., Long W.J., Ryrie C.G. An evaluation of gammahydroxybutyric acid in paediatric practice. //Brit. J. Anaesth.-1971;43:620-628.
27. Jay S., Elliott C.H., Fitzgibbons I. et al. A comparative study of cognitive behaviour therapy versus general anesthesia for painful medical procedures in children. //Pain.-1995;62:3–9.
28. Joint Commission on Accreditation on Health Care Organizations (2005) Comprehensive accreditation manual for hospitals. Joint Commission on Accreditation of Health Care Organizations, Oakbrook Terrace.
29. Keengwe I.N., Hegde S., Dearlove O. et al. Structured sedation programme for magnetic resonance imaging examination in children. //Anaesthesia.-1999;54:1069-1972.
30. Kleinschmidt S., Schellhase C., Mertzluft F. Continuous sedation during spinal anesthesia: gamma-hydroxybutyrate vs. propofol. //Eur. J. Anesthesiol.-1999;16:23–30.
31. Kraus B., Green S.M. Sedation and analgesia for procedures in children. //N. Eng. J. Med.-2000;342:938–945.
32. Laub A., Theurer G., Bodensohn M. et al. Sedation of children with gamma-hydroxybutyric acid for MRI examinations. //Paediat. Prax.-1998;53:687–692.
33. Levine D.A., Platt S.L. Novel monitoring techniques for use with procedural sedation. //Curr. Opin. Pediatr.-2005;17:351–354.
34. Malviya S., Voepel-Lewis T., Ludomirsky A. et al. Can we improve the assessment of discharge readiness? A comparative study of observational and objective measures of depth of sedation in children. //Anesthesiology.-2004;100:218–224.
35. Malviya S., Voepel-Lewis T., Tait A.R. Adverse events and risk factors associated with the sedation of children by nonanesthesiologists. //Anesth. Anal.-1997;85:1207–1213.

36. Malviya S., Voepel-Lewis T., Tait A.R. A comparison of observational and objective measures to differentiate depth of sedation in children from birth to 18 years of age. //Anesth. Anal.-2006;100:389–394.
37. Marx C.M., Stein J., Tyler M.K. et al. Ketamine-midazolam versus meperidine-midazolam for painful procedures in pediatric oncology patients. //J. Clin. Oncol.-1997;15:94–102.
38. Mason K.P., Zurakowski D., Connor L. et al. Infant sedation for MR imaging and CT: Oral versus intravenous pentobarbital. //Radiology.-2004;233:723–728.
39. Meyer S., Aliani S., Graf N., Gottschling S. Inter- and intraindividual variability in ketamine dosage in repetitive invasive procedures in children with malignancies. //Pediatr. Hematol. Oncol.-2004;21:161–166.
40. Meyer S., Aliani S., Graf N. et al. Sedation with midazolam and ketamine for invasive procedures in children with malignancies and hematological disorders: a prospective study with reference to the sympathomimetic properties of ketamine. //Pediatr. Hematol. Oncol.-2003;20:291–301.
41. Meyer S., Gottschling S., Georg T. et al. Gamma-hydroxybutyrate versus chlorprothixene/phenobarbital sedation in children undergoing MRI studies. //Klin.Padiatr.-2003;215:69–73.
42. Meyer S., Shamdeen M.G., Kegel B. et al. Effect of propofol on seizure like phenomena and electroencephalographic activity in children with epilepsy vs. children with learning difficulties. //Anaesthesia.-2006;61:1040–1047.
43. Miner J.L., Heegaard W., Plummer D. End-tidal carbon dioxide monitoring during procedural sedation. //Acad. Emerg. Med.-2002;9:275–280.
44. Motas D., McDermot N.B., VanSickle T., Friesen R.H. Depth of consciousness and deep sedation attained in children as administered by nonanaesthesiologists in a children's hospital. //Pediatr. Anaesth.-2004;14:256–260.
45. Newman D.H., Azer M.M., Pitetti R.D., Singh S. When is a patient safe for discharge after procedural sedation? The timing of adverse events in 1367 pediatric procedural sedations. //Ann. Emerg. Med.-2003;42:627–635.
46. O'Donnell J.J., Maurice S.C., Beattie T.F. Emergency analgesia in the paediatric population. Part III Non-pharmacological measures of pain relief and anxiolysis. //Emerg. Med. J.-2002;19:195–197.
47. Overly F.L., Wright R.O., Connor F.A. Jr. et al. Bispectral analysis during pediatric procedural sedation. //Pediatr. Emerg. Care.-2005;21:6–11.

48. Parker R.I., Mahan R.A., Giugliano D., Parker M.M. Efficacy and safety of intravenous midazolam and ketamine as sedation for therapeutic and diagnostic procedures in children. //Pediatrics.-1997;99:427–431.
49. Pediatric Sedation Research Consortium (2003). Supported by the Department of Anaesthesia, Dartmouth Hitchcock Medical Center. Доступно: <http://an.hitchcock.org/PediatricSedationRC/> (accessed July 23rd, 2006)
50. Pellier I., Monrigal J.P., Le Moine P. et al. Use of intravenous ketamine-midazolam association for pain procedures in children with cancer. A prospective study.//Paediatr. Anaesth.-1999;9:61–68.
51. Pomeranz E.S., Chudnofsky C.R., Deegan T.J. et al. Rectal methohexital sedation for computed tomography imaging of stable pediatric emergency department patients. //Pediatrics.-2000;105:1110–1114.
52. American Society of Anesthesiologists Task Force on Sedation and Analgesia by Non-Anesthesiologists. Practice guidelines for sedation and analgesia by non-anesthesiologists. //Anesthesiology.-2002;96:1004–1017.
53. Reyle-Hahn M., Niggemann B., Max M. et al. Remifentanyl and propofol for sedation in children and young adolescents undergoing flexible bronchoscopy. //Paediatr. Anaesth.-2000;10:59–63.
54. Sandler E.S., Weyman C., Conner K. et al. Midazolam versus fentanyl as premedication for painful procedures in children with cancer. //Pediatrics.-1992;89:631–634.
55. Schechter N.L., Weisman S.J., Rosenblum M. et al. The use of oral transmucosal fentanyl citrate for painful procedures in children. //Pediatrics.-1995;95:335–339.
56. Schwanda A.E., Freyer D.R., Sanfilippo D.J. et al. Brief unconscious sedation for painful pediatric oncology procedures. Intravenous methohexital with appropriate monitoring is safe and effective. //Am. J. Pediatr. Hematol. Oncol.-1993;15:370–376.
57. Sherwin T.S., Green S.M., Khan A. et al. Does adjunctive midazolam reduce recovery agitation after ketamine sedation for pediatric procedures? A randomized, doubleblind, placebo-controlled trial. //Ann. Emerg. Med.-2000;35:229–238.
58. Sievers T.D., Yee J.D., Foley M.E. et al. Midazolam for conscious sedation during pediatric oncology procedures: safety and recovery parameters. //Pediatrics.-1991;88:1172-1179.
59. Soreide E., Eriksson L.I., Hirlekar G. et al. (Task Force on Scandinavian Pre-operative Fasting Guidelines, Clinical Practice Committee Scandinavian Society of Anaesthesiology and Intensive Care Medicine) Pre-operative fasting guidelines: an update. //Acta Anaesthesiol. Scand.-2005;49:1041–1047.

60. Tamminga R.Y., Noordhoek M., Kroon J. et al. Ketamine anesthesia with or without diazepam premedication for bone marrow punctures in children with acute lymphoblastic leukemia. //Pediatr. Hematol. Oncol.-2000;17:383–388.
61. Tobias J.D., Phipps S., Smith B., Mulhern R.K. Oral ketamine premedication to alleviate the distress of invasive procedures in pediatric oncology patients. //Pediatrics.-1992;90:537–541.
62. Twite M.D., Friesen R.H. Pediatric sedation outside the operating room: the year in review. //Curr. Opin. Anaesthesiol.-2005;18:442–446.
63. Vasile B., Rasulo F., Candiani A., Latronico N. The pathophysiology of propofol infusion syndrome: a simple name for a complex syndrome. //Intensive Care Med.-2003;29:1417–1425.
64. Volle E., Park W., Kaufmann H.J. MRI examination and monitoring of pediatric patients under sedation. //Pediatr. Radiol.-1996;26:280–281.
65. Yates S.W., Viera A.J. Physostigmine in the treatment of gamma-hydroxybutyric acid overdose. //Mayo Clin. Proc.-2000;75:401–402.
66. Yldzda D., Yapcoglu H., Ylmaz H.L. The value of capnography during sedation or sedation/analgesia in pediatric minor procedures. //Pediatr. Emerg. Care.-2004;20:162–165

УДК 616 832-002-031, 13:078,33

Features of Clinical Picture of Viliuisk Encephalomyelitis at the Present Stage

R.S. Nikitina, V.A. Vladimirtsev, A.P. Danilova, F.A. Platonov

FSSE «Institute of Health», Yakutsk

Resume: The author gives classification of VE and examples of clinical cases of spastic-paretic and demented-paretic forms of VE. At present some changes in severity of VE development in patients are revealed. Lately clinical manifestations of VE have changed a little to ease. Primary chronic forms of VE without acute phase are found out.

Keywords: Viliuisk Encephalomyelitis (VE), spastic-paretic form (SPF), demented-paretic form (DPF).

In the permanent loci of Viliuisk Encephalomyelitis (VE) the contingent of patients is revealed with encephalopathy of unclear genesis, organic neurologic microsymptoms (ONMS) that are typical for clinical authentic VE cases [1]. Such state of health of the group of VE risk