

nety, ako sú kreslené seriály, s melodickými básňami, výsledky potvrdili, že audiovizuálne podnety sú účinné pri redukcii fyziologických indikátorov bolesti, pričom vizuálna distrakcia dosiahla 74% efektívnosť (59). Ďalšia štúdia preukázala účinnosť medical screen pri deťoch vo veku 1–3 roky, čo zlepšilo management bolesti pri prevážoch popálených pacientov (60).

Záver

Užívanie opioidov pri liečbe bolesti u detských pacientov je často spojené s vedľaj-

šími účinkami, ako sú sedácia, nevoľnosť či riziko vzniku závislosti. Preto je nevyhnutné opioidy kombinovať s neopioidnými analgetikami, ako sú NSAID alebo paracetamol, a zároveň implementovať nefarmakologické prístupy, ako terapia virtuálnou realitou, hudobná terapia či distračné techniky. Táto kombinácia umožňuje znížiť dávky opioidov, minimalizovať riziko vedľajších účinkov a zlepšiť celkové zvládanie bolesti u detských pacientov s popáleninami. Uvedený multimodálny prístup je kľúčom k bezpečnejšej

a efektívnejšej terapii. Kombinácia farmakologických metód a nefarmakologických metód môže znižovať nielen intenzitu bolesti, ale tiež môže zlepšovať psychický stav pacienta. Pre efektívne zvládanie bolesti je nevyhnutné prispôbiť terapiu potrebám každého pacienta a pravidelne monitorovať jej účinnosť. Multimodálny prístup by sa mal stať štandardom v liečbe detských pacientov s popáleninami, aby sa dosiahli optimálne výsledky a minimalizovali komplikácie spojené s bolesťou.

LITERATÚRA

- Bubb L, Masters J. Trauma and burns in children. *Anaesthesia & Intensive Care Medicine*. 2023;24(11):674–683.
- Ciornei B, David VL, Popescu D, et al. Pain Management in Pediatric Burns: A Review of the Science behind It. *Global Health*. 2023;2023:1–10.
- Radzikowska-Büchner E, Łopuszyńska I, Flieger W, et al. An Overview of Recent Developments in the Management of Burn Injuries. *Int J Mol Sci*. 2023;24(22):16357.
- Sommerhalder C, Blears E, Murton AJ, et al. Current problems in burn hypermetabolism. *Curr Probl Surg*. 2020;57(1):100709.
- Emery MA, Eitan S. Drug-specific differences in the ability of opioids to manage burn pain. *Burns*. 2020;46(3):503–513.
- Wala SJ, Ragan MV, Mallampalli GM, et al. Update in Pediatric Burn Care. *Curr Trauma Rep*. 2023;9(3):101–113.
- Holbert MD, Kimble RM, Jones LV, et al. Risk factors associated with higher pain levels among pediatric burn patients: a retrospective cohort study. *Reg Anesth Pain Med*. 2021;46(3):222–227.
- Daguet I, Raverot V, Bouhassira D, et al. Circadian rhythmicity of pain sensitivity in humans. *Brain*. 2022;145(9):3225–3235.
- Nahman-Averbuch H, King CD. Disentangling the roles of circadian rhythms and sleep drive in experimental pain sensitivity. *Trends Neurosci*. 2022;45(11):796–797.
- Woolard A, Wickens N, McGivern L, et al. "I just get scared it's going to happen again": a qualitative study of the psychosocial impact of pediatric burns from the child's perspective. *BMC Pediatr*. 2023;23(1):280.
- Souhrn údajů o přípravku MORPHIN BIOTIKA 1% – Sukl.cz. Státní ústav pro kontrolu léčiv. (n.d.-a). [on-line]. Available from: <https://prehledy.sukl.cz/prehledy/v1/dokumenty/64447>.
- Gandhi M, Thomson C, Lord D, et al. Management of pain in children with burns. *Int J Pediatr*. 2010;2010:825657. doi:10.1155/2010/825657.
- Coletta F, Pirolli R, Annunziata R, et al. Efficacy and Adverse Effects of IV Morphine for Burn Pain Management in the Emergency Department: An Observational Study. *Pain Ther*. 2024;13(4):857–864. doi:10.1007/s40122-024-00595-5.
- Burns D, Lal R, Mc Donnell C. Paediatric harmful adverse drug events (PHADE). *Paediatr Child Health*. 2023;28(5):299–304. Published 2023 Mar 31. doi:10.1093/pch/pxac132.
- Harbaugh CM, Lee JS, Hu HM, et al. Persistent Opioid Use Among Pediatric Patients After Surgery. *Pediatrics*. 2018;141(1):e20172439. doi:10.1542/peds.2017-2439.
- Richards HW, Shi J, Thakkar RK, et al. Assessing opioid administration in pediatric burn patients with nonsurgical management. *Burns*. 2021;47(2):322–326. doi:10.1016/j.burns.2020.11.014.
- Gandhi M, Thomson C, Lord D, et al. Management of pain in children with burns. *Int J Pediatr*. 2010;2010:825657. doi:10.1155/2010/825657.
- Souhrn údajů o přípravku Fentanyl Kalceks 0,05 mg/ml injekční roztok – Sukl.cz. Státní ústav pro kontrolu léčiv.

- [Internet]. Available from: <https://prehledy.sukl.cz/prehledy/v1/dokumenty/68475>.
- Serra S, Spampinato MD, Riccardi A, et al. Intranasal Fentanyl for Acute Pain Management in Children, Adults and Elderly Patients in the Prehospital Emergency Service and in the Emergency Department: A Systematic Review. *J Clin Med*. 2023;12(7):2609. Published 2023 Mar 30. doi:10.3390/jcm12072609.
- Storey K, Kimble RM, Holbert MD. The Management of Burn Pain in a Pediatric Burns-Specialist Hospital. *Pediatric Drugs*. 2021;23(1):1–10.
- Moman RN, Mowery ML, Kelley B. Alfentanil. [Updated 2024 Jan 11]. In: StatPearls [on-line]. Treasure Island (FL): StatPearls Publishing; 2024 Jan. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK470456/>.
- Gandhi M, Thomson C, Lord D, et al. Management of pain in children with burns. *Int J Pediatr*. 2010;2010:825657. doi:10.1155/2010/825657.
- Shiferaw A, Mola S, Gashaw A, et al. Evidence-based practical guideline for procedural pain management and sedation for burn pediatrics patients undergoing wound care procedures. *Annals of Medicine & Surgery*. 2022 Nov;83.
- Lundeberg S, Roelofse JA. Aspects of pharmacokinetics and pharmacodynamics of sufentanil in pediatric practice. *Pediatric anesthesia* 2011;21(3):274–279.
- Nielsen BN, Henneberg SW, Olsson EM, et al. The use of intranasal sufentanil and/or s-ketamine for treatment of procedural pain in children in an ambulatory setting: A retrospective observational study. *Acta anaesthesiologica Scandinavica* 2024 Aug 18.
- Rosen DM, Alcock MM, Palmer GM. Opioids for acute pain management in children. *Anaesthesia and Intensive Care*. 2022;50(1-2):81–94. doi:10.1177/0310057X211065769.
- Frestadius A, Grehn F, Kildal M, et al. Intranasal dexmedetomidine and rectal ketamine for young children undergoing burn wound procedures. *Burns*. 2022;48(6):1445–1451.
- Jeffs DA, Spray BJ, Baxley L, et al. Comparing novel virtual reality and nursing standard care on burn wound care pain in adolescents: A randomized controlled trial. *Journal for Specialists in Pediatric Nursing*. 2024;29(1).
- Souhrn údajů o přípravku Tramadol Kalceks 50 mg/ml injekční/infuzní roztok – Sukl.cz. Státní ústav pro kontrolu léčiv. (n.d.-a). [on-line]. Available from: <https://prehledy.sukl.cz/prehledy/v1/dokumenty/72240>.
- Souhrn údajů o přípravku DIPIDOLOR 7,5 mg/ml injekční roztok – Sukl.cz. Státní ústav pro kontrolu léčiv. (n.d.-a). [Internet]. Available from: <https://prehledy.sukl.cz/prehledy/v1/dokumenty/15149>.
- Souhrn údajů o přípravku Nalbuphin Orpha 10 mg/ml injekční roztok – Sukl.cz. Státní ústav pro kontrolu léčiv. (n.d.-a). [Internet]. Available from: <https://prehledy.sukl.cz/prehledy/v1/dokumenty/60258>.
- Stevens BJ, Hathway G, Zempsky WT, et al. Pain manage-

- ment in major pediatric trauma and burns. *Oxford Textbook of Pediatric Pain*: Oxford University Press; 2021.
- de Jong AEE, Bremer M, van Komen R, et al. Pain in young children with burns: Extent, course and influencing factors. *Burns* 2014;40(1):38–47.
- Storey K, Kimble RM, Holbert MD. The Management of Burn Pain in a Pediatric Burns-Specialist Hospital. *Pediatr Drugs*. 2021;23(1):1–10.
- Zeltzer LK, Krane EJ, Levy RL. Chapter 76 – Pediatric Pain Management. *Nelson Textbook of Pediatrics, 2 – Volume Set*. 21st Edition ed.; Elsevier Inc; 2020. p. 469–490.e2.
- Yaster M, Reid AL, Cohen MN, et al. Opioids in the Management of Acute Pediatric Pain. *The Clinical Journal of Pain*. 2019;06;35(6).
- Shahi N, Meier M, Phillips R, et al. Pain Management for Pediatric Burns in the Outpatient Setting: A Changing Paradigm? *Journal of burn care & research* 2020;41(4):814–819.
- Khan A, Parikh M, Minhajuddin A, et al. Opioid prescribing practices in a pediatric burn tertiary care facility: Is it time to change? *Burns* 2020;46(1):219–224.
- Drugs and Lactation Database (LactMed®) [on-line]. Bethesda (MD): National Institute of Child Health and Human Development; 2006. Aspirin. 2024 Sep 15. PMID: 30000255.
- LiverTox: Clinical and Research Information on Drug-Induced Liver Injury [on-line]. Bethesda (MD): National Institute of Diabetes and Digestive and Kidney Diseases; 2012. Aspirin. 2017 Jul 27. PMID: 31644207.
- Frestadius A, Grehn F, Kildal M, et al. Intranasal dexmedetomidine and rectal ketamine for young children undergoing burn wound procedures. *Burns* 2022;48(6):1445–1451.
- Delgado-Miguel C, Miguel-Ferrero M, Ezquerro A, et al. Sedoanalgesia in the Debridement of Pediatric Burns in the Emergency Department: Is It Effective and Safe? *Children (Basel)* 2023;10(7):1137.
- Rosenbaum SB, Gupta V, Patel P, et al. Ketamine. [Updated 2024 Jan 30; cited 2024 Aug 10]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK470357/>.
- Hansen JK, Voss J, Ganatra H, et al. Sedation and Analgesia During Pediatric Burn Dressing Change: A Survey of American Burn Association Centers. *Journal of burn care & research* 2019;40(3):287–293.
- Fagin A, Palmieri TL. Considerations for pediatric burn sedation and analgesia. *Burns and trauma* 2017;5(4):28.
- Shiferaw A, Mola S, Gashaw A, et al. Evidence-based practical guideline for procedural pain management and sedation for burn pediatrics patients undergoing wound care procedures. *Annals of Medicine and Surgery*. 2022;83:104756.
- Souhrn údajů o přípravku Paracetamol Accord 10 mg/ml infuzní roztok – Sukl.cz. Státní ústav pro kontrolu léčiv. (n.d.-c). [Internet]. Available from: <https://prehledy.sukl.cz/prehledy/v1/dokumenty/7323048>.