

Role of Buprenorphine in Chronic Pain Management in Covid-19

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Abstract: *The suitable Management of chronic pain COVID-19 pandemic is the most demanding process, particularly with developing evidence that COVID-19 Infection analogous to pain, muscle ache, extended neuropathic pain. This review provides the relevant management of chronic pain patients during the COVID-19 pandemic. Buprenorphine is a schedule third semisynthetic opioid analgesic show distinctive pharmacokinetic & pharmacodynamic properties, & involves vital role in chronic pain management in COVID-19. Transdermal formulation of buprenorphine provide controlled delivery for sustained analgesic effectiveness. Its matrix system permits for slow release of buprenorphine & damage does not construct dose dumping i.e provides predictable serum buprenorphine level over a prolonged period. Also, Buprenorphine show minimal level of adverse effects compared to other opioids like morphine, fentanyl involves respiratory depression, addiction, euphoria, etc. & show good patient acceptance.*

Keywords: Transdermal Buprenorphine, COVID-19, Pain management, Safety

REFERENCES

- [1]. Treede RD, Rief W, Barke & et.al chronic pain as a symptom or a disease: The JASP classification of chronic pain for the International classification of Disease are (ICD-11). pain for the International classification of Disease (ICD-11). pain 2019; 160(1): 19-27. doi ; 10. 1097/j. pain.0000000000001384.
- [2]. Khanna IK, Pillarisetti S., Buprenorphine an attractive opioid with underutilized potential in treatment of chronic pain. J pain Res. 2015, 8: 859-70
- [3]. kress H.G. clinical update on the pharmacology, efficacy and safety of transdermal buprenorphine. Eur J. pain, 2009; 13 (3): 219 -30
- [4]. Lewis JW. Ring. C- bridged derivatives of thebaine & and oripavine. Adv. Biochem. psychopharmacol 1973;8: 122-36
- [5]. Ehlich AT, Darceq E Recommending buprenorphine for pain management. pain manag. 2019; 9(1): 13-26
- [6]. Corder G. Castro DC. Bruchas MR, Scherrer G. Endogenous & and exogenous opioids in pain. Annu Rev. neurosci.2018, 41: 453-73
- [7]. Jusinski DR, pevnick Js (Griffith JD. Human pharmacology and abuse potential of the analgesic buprenorphine: a potential agent. for treating narcotic addiction. Arch gen psychiatry, 1978; 35 (4) : 501-16
- [8]. The national alliance of Advocates For Buprenorphine treatment for opioid addiction in the privacy of a doctor office 2015. Available at: [http:// www. naabt. org/ documents | naabt - brochure %20 Version % 202.pdf](http://www.naabt.org/documents|naabt-brochure%20Version%202.pdf). accessed march 25, 2019
- [9]. Davis M.P., pasternak G, Behm B treating Chronic pain; an overview of clinical studies centered on the buprenorphine option. Drugs 2018, 78 (12): 1211-28.
- [10]. Sutcliffe KJ, Henderson G ,kelly E,sessions RB. Drug Binding poses relate structure with efficacy in the mu opioid receptor. J mol Biol 2017; 429 (R); 1840-51.
- [11]. Corder G, Castro DC, Bruchas MR, schemer G. Endogenous & exogenous Opioids in pain. Annu rev Neuroscience 2018, 41 : 453-73
- [12]. Larochelle MR, Berson D land T, Stopka TJ, Wang N, Xuan Z,et.al. Medication for opioid use disorder after non-fatal opioid overdose and association with mortality; a cohort study. • Ann Inteon med.2018; 169(3): 137-45.
- [13]. Raehal KM, Bohn LM. The role of beta arrestin - 2 in severity of antioiceptive tolerance & and physical dependence induced by different opioid pain therapeutics. Neuropharmacology.2011; 60 (1): 58 - 65

- [14]. Just s. Illings & Trester - Zedlitz m. Lau EK, Kotowski SJ, Miess E, et al. differentiation of opioid drug effect by hierarchical multi- site. phosphorylation, *mol pharmacol.* 2013; 83 (3):693-9:
- [15]. schulz s. mayer D. Pfeiffer M, Stumm R , Koch T, Holtt V. morphine induces terminal micro-opioid receptor desensitization by sustained phosphorylation of serine 375 -*EMBO J*, 2004; 23 (16): 3282-9
- [16]. Saidak Z, Blake Palmerk & Hay DL, Northup JK, grass M. Differential activation of g-protein by mu opioid agonists. *Br J. Pharmacol.*2006;147(6):671-80
- [17]. 17)Huesti's MA, cone. EJ, pirny so, Umbricht A, preston kl. Intravenous Buprenorphine & nor- buprenorphine -pharmacokinetics In Human. *Drug alcohol depend*, 2013;131 (3): 258-62 •
- [18]. kuhlman JJ Jr, Lalani S, magluilo J Jr, Levine B, Darwin W. D Human pharmacokinetics of intravenous, sublingual & and buccal buprenorphine *J Anal Toxicol*, 1996; 20(6): 369 - 78
- [19]. Batrans® (Buprenorphine transdermal system) [prescribing information], Stamford, ct:perdue pharma L.P.;2018
- [20]. Aiyer R, Gulati A Gungors, Bhatia A, Mehta N. treatment of chronic pain with various buprenorphine formulations :a systematic review of clinical studies, *Anesth analg.* 2018; 127 (2): 529-38
- [21]. Elkader A, Sproule B. Buprenorphine: clinical pharmacokinetics in the treatment of opioid dependence, *clin pharmacokinet*, 2005; 14 (7):661-80
- [22]. stinchcomb Al, Paliwal A , Dua R Imoto H wood ward RW flynn GL. permeation of buprenorphine and its 3-alkyl - ester prodrugs through Human skin, *pharm Res.* 1996; 13 (10):1519-23.
- [23]. Probuphine [Prescribing information]. South san francisco, CA. Titran pharmaceuticals, Inc, 2018.
- [24]. kobayashi k, Yamamoto T, Chiba K, Tani M, shimada N, Ishizaki T, et al. Human buprenorphine N-dealkylation is catalysed by cytochrome P450 3A4 *Drug metab Dispos.* 1998;26 (8) 818-21
- [25]. Picard. N, cresteil T, Djebli N, market P. In Vitro metabolism study of buprenorphine: evidence for new metabolic pathways. *Drug metabolism Dispose.*2005;33(5):689-95.
- [26]. Huang P, kehner GB, cowan A, Liu-chen LY, comparison of pharmacological activities of buprenorphine and nor - buprenorphine is a potent opioid agonist. *J. pharmacol Exp. Ther* 2001; 297 (2): 688 - 95
- [27]. Ohtani M. Kotaki H. Sawada. Y. Iga T. Comparative analysis of buprenorphine and nor- buprenorphine induced analgesic effects based on pharmacokinetics pharmacodynamic modeling. *J pharmacol Exp. then* 1995;272 (2): 505-10
- [28]. Brewster D, Humphreg: MJ, Mcleavs M.A. Biliary excretion ,metabolism and enterohepatic circulation of buprenorphine. *Xenobiotic* 1981 ; 11 (3); 189-96
- [29]. Cone EJ, Gorodetzky CW, Yousefnejad D, Buchwald WF, Johnson RE. The metabolism and excretion of buprenorphine In Humans *Drug metab. Dispos*, 1984. 12 (5): 577-81
- [30]. Johnson RE, Fudala PJ Pyne R Buprenorphine consideration for pain management. *J pain symptom manage* 2005 Mar; 29 (3):297-326
- [31]. Dahan A. opioid induced respiratory effects : new data on buprenorphine. *patient med* 2006; 20 suppl.1:53-8
- [32]. Batrans 5,10 and 20 ug/h transdermal patch : EV summary of product characteristics (online) available from. URL: [http:// www.medicines. Org.uk/ emc/medaine | 16787](http://www.medicines.Org.uk/emc/medaine|16787) (Accessed 2011 Aug 2)
- [33]. Butrans (Buprenorphine) transdermal System for transdermal administration; Us prescribing [online]. Available from URL: [http:// www.purduepharma. com/pi/prescription/ butranspi: pdf](http://www.purduepharma.com/pi/prescription/butranspi.pdf) (Accessed 2011 Aug 2)
- [34]. Mundin GE, Smith KJ, Bailey P. pharmacokinetics of transdermal buprenorphine compared with sublingual buprenorphine, in healthy Volunteers. [poster]. Royal college of general practioners Annual primary care conference; 2011 oct 20-22, Liverpool
- [35]. kitzmiller J, Groen D, singh A. et. al. Multiple application pharmacokinetics and adhesion analyses of a buprenorphine transdermal system [abstract no. 328]. *J. pain* 2011 Apr;12 suppl. 1(4): P58
- [36]. vallejoR, Barkin RL, Wang vc. pharmacology of opioids in the treatment of chronic pain syndromes. *pain phys.* 2011; 14 (4):E343-E360360
- [37]. Pergolizzi J, Boger RH, Budd K, et al opioids. and management of chronic severe pain in elderly: consensus statement of an international expert panel with focus on the six clinically most often used World Health

- organization step III opioids,buprenorphine, fentanyl, hydromorphine, methadone,morphine oxycodone)pain pract, 2008; 8(4): 287-313
- [38]. Dey S., Usmani H, Hussain A, pain practice during the COVID -19 pandemic transitioning to a new normal Indian J pain. 2020; 34: 61
- [39]. Likar R. transdermal Buprenorphine in the management of persistant pain safety aspects. Then clin Risk manag. 2006; 2:115-125
- [40]. Grissinger N, sittl R., Likar R. transdermal buprenorphine in clinical practice a post-marketing survillance study in patients curr Med Res.Opin 2005; 21: 1147 -1156