

CHRONIC PAIN MANAGEMENT IN SICKLE CELL DISEASE: PAST, PRESENT AND FUTURE

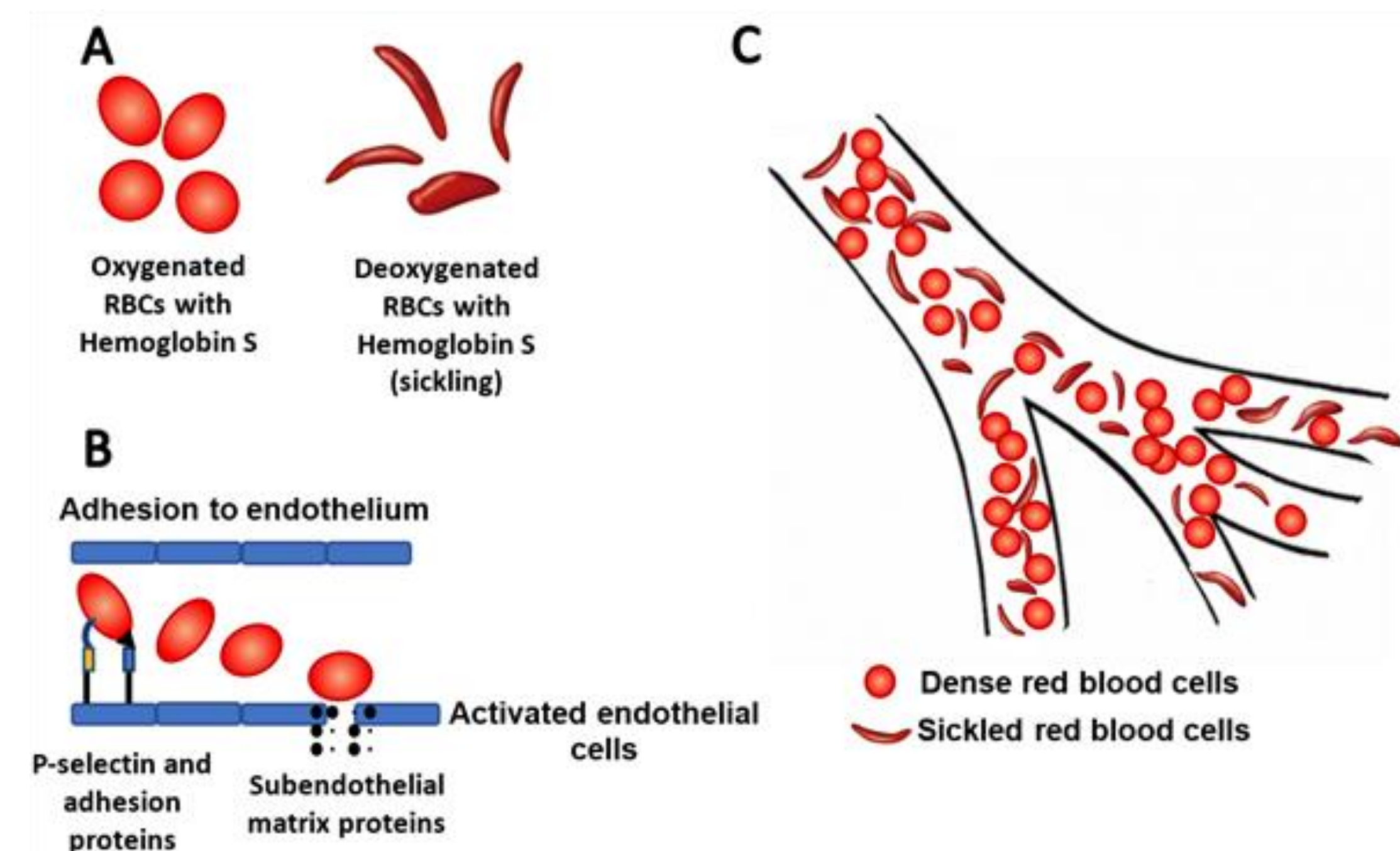
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Introduction

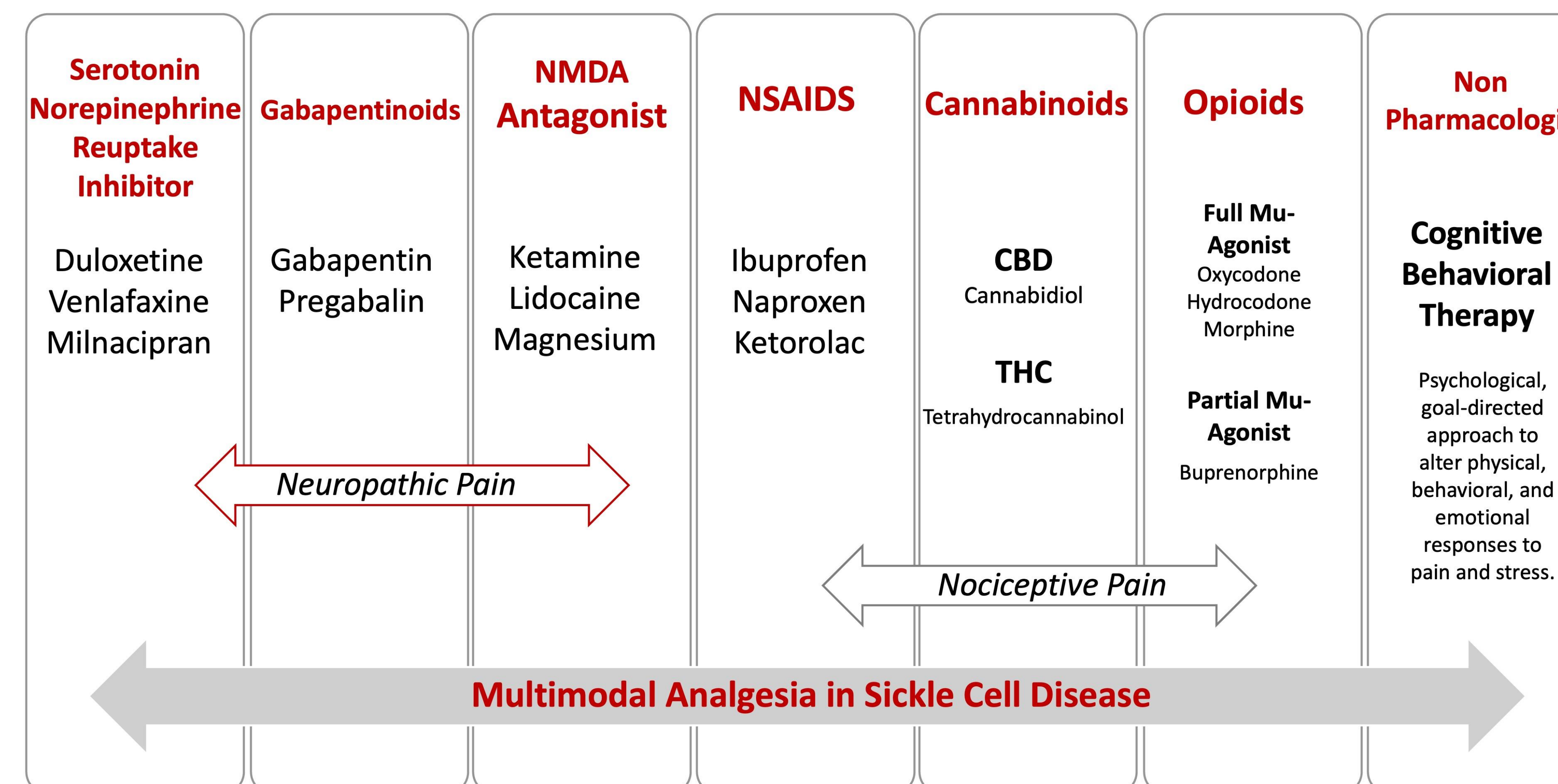
Sickle cell disease is a lifelong condition marked by intense and often unpredictable episodes of pain. SCD comprises a set of inherited hemoglobinopathies resulting in characteristic sickling of RBCs, owing to the term “vaso-occlusive crisis”. Pain results when sickled RBCs cause microvascular obstruction, ischemia and tissue damage within various organ systems.¹ Over time, acute pain crises lead to chronicity as a result of nociceptive pain from VOC, neuropathic pain from central sensitization and chronic inflammation.

Historically, the treatment of chronic pain centered around intramuscular opioid injections and long-term opioid use — approaches that often resulted in opioid tolerance, dependence, and at times inadequate pain control. As these patients age, their acute pain crises often develop into chronic pain syndromes. The continued use of opioids often requires escalating doses that providers may not be comfortable prescribing which can lead to patient-physician discordance —ultimately leading to delayed care and poorer outcomes.



Case Presentation

A 43-year-old African American female with Sickle Cell Disease (SCD) presents to the SCD clinic for optimization of pain medication. Her current pain regimen included a multimodal analgesic approach of Tylenol, Lyrica, Ibuprofen and Oxycodone. In addition to the disease modifying drug Hydroxyurea. However, our patient still frequently visited the emergency department for pain crisis. Her ED pain regimen consisted of hydromorphone 5 mg IV PRN along with IV hydration and other supportive measures. Per patient report, she expressed dissatisfaction with her current pain regimen and wanted to discuss options for further optimization.



Discussion

Buprenorphine, a partial μ -opioid receptor agonist and κ -opioid receptor antagonist, is gaining attention as a safer and more effective alternative for chronic pain management in patients with SCD. Its high receptor affinity and slow dissociation rate provide sustained analgesia with a lower risk of respiratory depression and misuse due to its ceiling effect. These pharmacologic properties make buprenorphine particularly advantageous in mitigating the risks associated with long-term opioid therapy.

However, initiation requires caution, as precipitated withdrawal can occur in patients actively using full opioid agonists. Current barriers to implementation include limited provider familiarity, stigma surrounding its use, and a lack of standardized dosing protocols in the SCD population. Further studies are needed to evaluate its long-term efficacy, safety profile, and integration into multimodal pain management frameworks tailored to individuals with SCD.

References

- Tolu, S. S., & Van Doren, L. (2022). Acute and chronic pain management in patients with sickle cell disease in the modern era: A comprehensive review. *Transfusion and Apheresis Science*, 61(6), 103533. <https://doi.org/10.1016/j.transci.2022.103533>
- Edwards, L. A., Edwards, C. V., & Tolba, R. (2020, August 1). Transforming acute pain management in sickle cell disease: Where are we now? *ASRA News*. <https://asra.com/news-publications/asra-newsletter/newsletter-item/asra-news/2020/08/01/transforming-acute-pain-management-in-sickle-cell-disease-where-are-we-now->
- Hallo-Carrasco, A., Albuja, M., Bazile, G., Srinivasan, N., Master, A., Kaufman, A., Kasubhai, M., Zhang, H., & Hunt, C. (2024). Evaluating buprenorphine as an alternative to opioids for chronic pain management in sickle cell disease: A scoping review [Conference abstract]. *American Society of Regional Anesthesia and Pain Medicine*. <https://asra.com/docs/default-source/events-education-documents/pm24/abstract-6260ef19eab4-8718-4461-84e5-957f2845ebd.pdf>