

Regional anesthesia for sickle cell vaso-occlusive crises

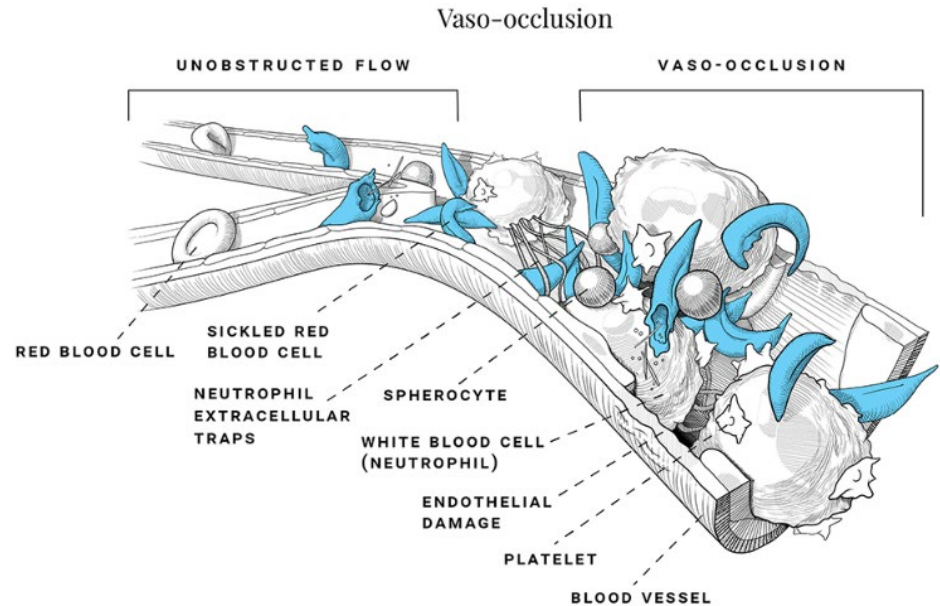
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Presented by Daniel Eskinazi DO

Mentors: Cameron Marshall MD & Ammar Siddiqui MD


Case: JF

- 18 year old female
 - PMH sickle cell disease
 - Presents to ED with acute pain crisis
 - Pain at bilateral **knees and hips**
- Home pain regimen:
 - Oxycodone ER 30mg q12h
 - Oxycodone IR 10mg q6h PRN
- Started on home regimen +
 - Ketamine drip
 - Hydromorphone PCA
 - IV acetaminophen
 - PO ketorolac



REVIEW

Role of regional anesthesia in patients with acute sickle cell pain: A scoping review

Munaza B. Rizvi  | David O. Kessler | Joni E. Rabiner

Department of Emergency Medicine, Division of Pediatric Emergency Medicine, Columbia University Irving Medical Center, New York, USA

Correspondence
Munaza Batool Rizvi, Department of Emergency Medicine, Division of Pediatric Emergency Medicine, Columbia University Medical Center, 3959 Broadway, New York, NY 10032, USA.
Email: mr4053@cumc.columbia.edu

Abstract

Sickle cell disease is the most prevalent inherited blood disorder in the world, with significant morbidity and mortality. Patients often have recurrent painful vaso-occlusive episodes, and the American Society of Hematology gives a conditional recommendation for the use of regional anesthesia for acute sickle cell pain management. This scoping review summarizes the current evidence and identifies gaps for future research. Our screening process is outlined, and articles that mentioned the use of regional anesthesia for acute sickle cell crises were included. We present and interpret our results and highlight opportunities for future investigation.

KEYWORDS

acute pain, epidural, nerve block, regional anesthesia, sickle cell anemia

1 | INTRODUCTION

Sickle cell disease is the most prevalent inherited blood disorder, with an estimated incidence of one in every 365 African American births and over 400,000 births worldwide annually.^{1,2} Patients with sickle cell disease often have recurrent painful vaso-occlusive episodes or “pain crises,” leading to significant morbidity and mortality.² Vaso-occlusive pain crises may be caused by hypoxia/reperfusion injury, ischemic tissue damage, and inflammation.³ Repeated episodes carry a higher risk of mortality⁴ and affect health-related quality of life.¹

The aim of this scoping review was to summarize the current evidence for regional anesthesia in treating acute pain crises in patients with sickle cell disease and identify gaps in the literature for future research. In addition, we looked at regional anesthesia’s feasibility, accessibility, effectiveness, and side effects in managing pain for patients with sickle cell disease.

2 | METHODS

The methodology for this scoping review was based on the frame-

- Total sample size of only 33 patients
- “While the existing literature does show decreased pain after initiation of regional anesthesia with no significant side effects, a substantial portion of the data comes from case reports”



Correspondence

Pericapsular nerve group blockade for sickle cell disease vaso-occlusive crisis*



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Pediatric sickle cell disease (SCD) with vaso-occlusive crisis (VOC) represents a common cause of hospitalization and morbidity.

The anterior hip capsule is innervated by the obturator nerve (ON), accessory obturator nerve (AON) and FN [5]. The articular branches

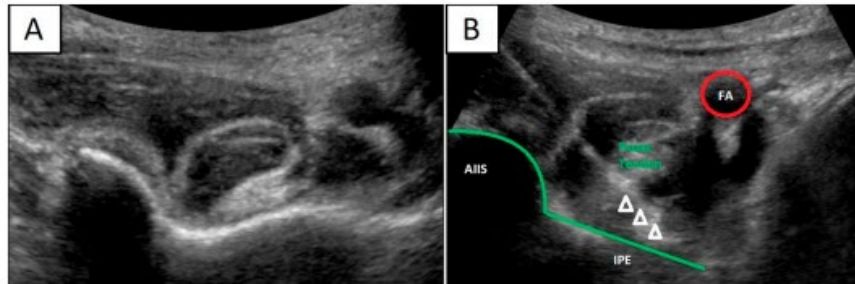


Fig. 1. (A) Visualization of the pericapsular nerve group block sonoanatomy. (B) Pericapsular nerve group block with needle in-situ, surrounded by local anesthetic. Anterior inferior iliac spine (AIIS); iliopubic eminence (IPE); femoral artery (FA).

- 15 year old male
 - Presented with vaso-occlusive pain in right hip
- ~100mg IV morphine over first 24h
- Right pericapsular nerve group (PENG) block
- Post block
 - Reported no pain
 - Required only 11mg IV morphine equivalents
 - Discharged after 2 days

American Society of Hematology 2020 guidelines for sickle cell disease: management of acute and chronic pain

Recommendation 2d

For *adults and children* presenting with acute pain related to SCD, the ASH guideline panel *suggests* regional anesthesia treatment approaches for localized pain that is refractory or not effectively treated with opioids alone (conditional recommendation based on very low certainty in the evidence about effects ⊕○○○).

Case: JF

- Bilateral ultrasound-guided genicular nerve blocks performed
 - 100% pain relief in the knees
- Bilateral PENG blocks
 - Discharged two days later

Regional techniques should be considered for patients with vaso-occlusive crises who are refractory to traditional medication management