Characterizing Chronic Pain Following Brain Injury in Special Operations Forces: Impact of Multidisciplinary Rehabilitation

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Introduction

Chronic pain contributes to persistent disability after mild Traumatic Brain Injury (mTBI), with Special Operations Forces (SOF) personnel facing unique cumulative risks.

Pain frequently overlaps with multiple systems — collectively described as "Operator Syndrome."

Characterizing pain phenotypes within the Veterans Affairs Intensive Evaluation and Treatment Program (IETP) may enable more targeted, multidisciplinary care.

Materials and Methods

1. We conducted a narrative review of pain phenotypes following mTBI across civilian, veteran, and SOF populations, paired with a structured review of IETP patients.
2. We evaluated the case of a 22-year active-duty Army Master Sergeant. Patient informed consent was obtained.
3. The patient experienced sustained relief following stellate ganglion block during IETP admission.

Discussion

Pain in SOF/IETP patients is complex.

Identifying dominant pain phenotype allows for targeted interventions, as demonstrated in the presented case.

Systematic pain phenotyping supports more personalized, multidisciplinary treatment for this underserved population.

Future Directions

- To use large language models to characterize and stratify pain phenotypes in IETP patients.
- To identify associations between pain categories and beneficial treatment approaches.

Key Takeaways

- **Pain is rarely isolated:** SOF/IETP patients frequently present with overlapping headache, musculoskeletal, neuropathic, and multisystem symptoms.
- **Phenotype matters:** Careful characterization of the dominant pain phenotype helps identify targeted treatment opportunities to provide meaningful results and relief from pain within complex polytrauma presentations.
- **Multidisciplinary care is essential:** Pain management must address co-occurring PTSD, cognitive, sleep, and functional impairments alongside pain.
- **IETP offers an opportunity for targeted intervention:** Systematic characterization of pain phenotypes allow for personalized, multidisciplinary rehabilitation strategies for SOF personnel.

Results

BY THE NUMBERS

Post-traumatic headache burden: 55–92% after mTBI.

Musculoskeletal pain: 81.5% in a veteran polytrauma cohort.

Chronic pain + PTSD: Up to 53% of veterans with PTSD.

SOF personnel: Higher rates of chronic pain, osteoarthritis, and obstructive sleep apnea than Conventional Forces.

Domain	Key Finding
IETP Total Enrollment	821 participants (2009–2023)
SOF Proportion	74.2% of IETP participants
Average Age at Admission	35.3 years
Musculoskeletal Pain	~81.5% of veterans
Post-Traumatic Headache	55%–92% post-mTBI
Chronic Pain (General Veterans)	~32% of all veterans
Chronic Pain + PTSD	4–8% of all veterans; 53% of those with PTSD
SOF Pain Symptoms	SOF had higher chronic pain, osteoarthritis, hip fractures.



Full Abstract

REFERENCES

1. Ryan JL, et. al. Characterization of Service Members and Veterans with Mild Traumatic Brain Injury Participating in the Department of Veterans Affairs Intensive Evaluation and Treatment Programs. Mil Med. 2025 Sep 1;190(Supplement_2):281-287. doi: 10.1093/milmed/usaf159. PMID: 40984143.

2. Haun, Jolie, et al. National Intensive Evaluation and Treatment Program (IETP) for Persons With Mild to Moderate Traumatic Brain Injury (TBI) 8269. Archives of Physical Medicine and Rehabilitation.

3. Haun JN, et. al. Traumatic Brain Injury Intensive Evaluation and Treatment Program: Protocol for a Partnered Evaluation Initiative Mixed Methods Study. JMIR Res Protoc. 2023 May 9;12:e44776. doi: 10.2196/44776. PMID: 37159250; PMCID: PMC10206625

4. Lew HL, et. al. Prevalence of chronic pain, posttraumatic stress disorder, and persistent postconcussive symptoms in OIF/OEF veterans: polytrauma clinical triad. J Rehabil Res Dev. 2009;46(6):697-702. doi: 10.1682/jrrd.2009.01.0006. PMID: 20104399.

5. Buckenmaier CC et al. Pain as a Barrier to Human Performance: A Focus on Function for Self-Reporting Pain With the Defense Veterans Pain Rating Scale. J Spec Oper Med. 2016 summer;16(2):82-7. PMID: 27450608.