DIDACTIC CASE REPORT

Navigating Psychiatric Concerns in a Veteran Reporting Gulf War Illness: A Case Report

Christian Alan Botz-Zapp, BS[1]; Jami Wang, DO[2]; Eric Kazangian, MD[2]; Jennifer Ferrer, MD[2]

Perm J 2025;29:24.071 • https://doi.org/10.7812/TPP/24.071

CAB-Z, 0000-0002-7428-6238; JW, 0000-0002-6814-1817; EK, 0009-0008-0519-2407; JF, 0009-0006-4647-7711

Abstract

Gulf War illness (GWI) is a chronic condition affecting nearly a third of Gulf War veterans and is characterized by persistent symptoms across a number of physical and neuropsychiatric domains. This case study examined a 52-year-old veteran admitted on a psychiatric hold for danger to others. The patient's symptoms, including chronic migraine, widespread musculoskeletal pain, skin sensitivities, environmental allergies, and mood and cognitive disturbances, met criteria for GWI according to 2 accepted case definitions. Initial misdiagnosis of psychosis was corrected upon evaluation, which identified severe anxiety consistent with generalized anxiety disorder. Treatment focused on providing validation of the patient's chronic symptoms and managing his anxiety through pharmacologic intervention. This case underscored the importance of recognizing GWI to ensure accurate diagnoses and targeted care for veterans.

Introduction

Gulf War illness (GWI) describes a group of chronic symptoms that affects 25% to 32% of the 700,000 veterans who served in the 1990–1991 Persian Gulf War. This figure represents the proportion of deployed Gulf War veterans (GWVs) who experience multiple chronic symptoms above the "background" rate of similar symptoms seen in nondeployed veterans.[1] Also classified under the umbrella term chronic multisymptom illness (CMI), GWI has 2 existing definitions that are recognized by the National Academy of Medicine (formerly known as the Institute of Medicine).[2] The Kansas Criteria require GWVs to have multiple mild symptoms or at least 1 moderately severe symptom in at least 3 of 6 domains for a duration of 6 months or longer. These domains include fatigue and sleep problems, pain, neurologic/cognitive/mood symptoms, gastrointestinal symptoms, respiratory symptoms, and skin abnormalities. Exclusionary criteria are met when symptoms are clearly attributable to another health condition or in cases when previously diagnosed psychiatric conditions, such as schizophrenia or bipolar spectrum disorders, interfere with one's ability to report symptoms.[3] According to the Centers for Disease Control and Prevention criteria, GWI is characterized

Corresponding Author
Jami Wang, DO
jami.x.wang@kp.org

Author Affiliations
[1] Kaiser Permanente Bernard J Tyson School of Medicine, Pasadena, CA, USA
[2] Kaiser Permanente Southern California, Fontana, CA, USA

Author Contributions
Christian Alan Botz-Zapp, BS, and Jami Wang, DO, participated in chart review and design and writing of the case report. Christian Botz-Zapp, BS, Jami Wang, DO, Eric Kazangian, MD, and Jennifer Ferrer, MD, participated in patient interviewing.

Acknowledgments
The authors would also like to acknowledge the patient's valuable contribution to this case report, as the patient wanted to raise awareness about Persian Gulf Illness and mental health.

Disclosures
Conflicts of Interest: None declared
Funding: None declared
Consent: The patient provided written informed consent.

Relevancy Statement
This case report demonstrated quality of care by considering unique factors that contributed to psychological distress in veterans and adjusting treatment and hospital course accordingly.

Published Online First: May 9, 2025
Final issue publication: June 16, 2025
Volume 29 Issue 2

by 1 or more chronic symptoms from at least 2 of 3 domains, including fatigue, mood/cognition, and musculoskeletal symptoms, for a duration of 6 months or longer.[4]

GWI can overlap with other chronic symptom disorders, such as functional gastrointestinal disorders, fibromyalgia, and myalgic encephalomyelitis/chronic fatigue syndrome, and it is often accompanied by physical or psychiatric comorbidities.[5,6] However, it is important to emphasize that GWI is a distinct condition with its own etiologic and physiologic underpinnings. Exposure to chemical agents during the Gulf War, particularly acetylcholinesterase inhibitors, has been linked to GWI.[7] Mechanistically, leading hypotheses have suggested that inflammation and mitochondrial dysfunction play important roles in the pathophysiology of GWI.[8–10] Recent evidence has shown that mitochondrial impairment, rather than inflammation, positively predicts GWI symptoms, including neuropsychiatric sequalae such as anxiety.[11] Pharmacologic agents that enhance cellular energy function, such as Coenzyme Q10 supplementation, have demonstrated improvements in GWI symptoms, including mood and cognitive disturbances.[12] These findings further support the hypothesis that cell energy impairment plays a role in GWI pathophysiology.

Although there are ongoing efforts to establish a code in the International Classifications of Disease, GWI remains a poorly recognized and understood condition within the medical community.[13] A longstanding concern among GWVs and experts in GWI is the historical tendency to label symptoms as purely psychological phenomena.[14] This overlooks evidence of specific physiological processes underlying GWI and the fact that somatic symptoms are present even in the absence of psychiatric comorbidities, such as posttraumatic stress disorder (PTSD).[15,16] The authors presented a case study of a GWV reporting a history of GWI, who presented to an inpatient psychiatric hospital on an involuntary hold. The authors explored the intricacies of addressing psychiatric concerns in the context of GWI and advocated for further education within the medical community to promote responsible, person-centered care for GWVs. The patient provided written informed consent for this manuscript.

Case Patient Presentation

A 52-year-old Black/American Indian man and veteran with a past psychiatric history of major depressive disorder, PTSD, and attention deficit hyperactivity disorder, with no prior hospitalizations or prior suicide attempts, presented on a 5150 for danger to others after being found at a fire station unclothed and with a firearm.

Upon intake, the patient was seen using a walker and was visibly anxious about speaking to a doctor. In recalling the events leading to his hospitalization, the patient explained that he was outside walking his dogs when he thought he might be having a stroke. He walked into a nearby fire station, placed his firearm on a table, and removed his shirt due to feeling overheated. When the fire station employees returned to find the patient, they called the local police department. The police placed the patient on a 5150 for danger to others. The patient did not recall any events following the arrival of an ambulance to the fire station; records from the emergency department show he received intramuscular Geodon and Ativan. The emergency department cited psychosis as the primary encounter diagnosis.

During the authors' interview with the patient, he reported being "allergic to everything," including the hospital blankets and gowns. The patient exhibited substantial distress regarding his allergies and lack of access to his home medications, noting that he was being harmed in the new, unfamiliar hospital environment. A former Navy SEAL, the patient reported that he was discharged from the military due to GWI. He served in the military for 6 years, including a deployment in the Gulf War, before developing chronic symptoms, including multiple allergies, skin sensitivities, chronic musculoskeletal pain, and chronic migraine. He reported 10/10 pain across multiple musculoskeletal sites during the authors' interview. He denied suicidal and homicidal ideation, auditory and visual hallucinations, paranoia, and delusions. His thought process was linear and logical, without evidence of responding to internal stimuli. The patient also denied substance use, which was supported by an unremarkable urine drug screen. Neurologic examination did not show signs of acute stroke.

The patient's chart listed allergies to several medications, including bupropion, fluoxetine hydrochloride, gabapentin, mirtazapine, morphine, oxycodone, paroxetine hydrochloride, pregabalin, simvastatin, vicodin (acetaminophen-hydrocodone), and amphetamine-dextroamphetamine. Other allergens included elevated immunoglobulin E markers to dust mites, cats, dogs, grass, trees, weed pollen, and grass. Family history was negative for allergies

or asthma. A note from an allergist recommended that the patient use environmental control, including dust mite encasements for pillows, mattresses, and box springs.

Per collateral, the patient's wife confirmed the patient's psychiatric and medical history, stating his allergies to preservatives found in shampoos, candles, cleaning supplies, and dish soap. The wife reported an increase in the patient's baseline anxiety after the passing of a family member and shared that he had also been anxiously awaiting the results of a follow-up magnetic resonance imaging for a previously documented spinal tumor. The wife believed that the patient went to the fire department because he was feeling anxious and looking for help.

Differential Diagnosis

Given the patient's service in the Gulf War, GWI was included as a potential explanation for his chronic symptoms. Other chronic symptom conditions, fibromyalgia and myalgic encephalomyelitis/chronic fatigue syndrome, were considered as well. In addition, psychiatric comorbidities were explored. Given the patient's reported history, PTSD, major depressive disorder, and attention deficit hyperactivity disorder were included in the differential. Generalized anxiety disorder (GAD) was likewise considered, as the patient's anxiety was both clinically significant and pervasive, encompassing distress related to several domains of his life. The patient's mental status examination revealed no evidence of acute psychosis, and his neurologic assessment showed no findings indicative of acute stroke. As such, these conditions were excluded from the treatment plan after thorough assessment.

Clinical Reasoning

There were multiple features of the patient's presentation that aligned with GWI. Based on the authors' initial evaluation, the patient met both the Kansas and Centers for Disease Control and Prevention criteria for GWI.[3,4] Medical records and patient interview revealed multiple, persistent symptoms across 3 domains, including skin abnormalities, musculoskeletal pain, and neurologic/cognitive/mood issues. These symptoms had been ongoing since his deployment in the Gulf War. This constellation of symptoms was not clearly explainable by another health condition according to his previous workups, and the patient did not meet criteria for neurologic or psychiatric conditions that could have affected accurate symptom reporting. An important aspect of the patient's presentation was his heightened anxiety. His high level of distress was initially mislabeled as a psychotic process by the referring emergency department. To be clear, the patient did not show evidence of psychosis or agitation during the authors' evaluation. The patient reported several stressors during and leading up to his hospitalization, and his pervasive and clinically significant anxiety in response to these stressors met criteria for GAD. Anxiety has been a well-documented neuropsychiatric consequence of GWI, with evidence linking it to mitochondrial dysfunction in GWVs.[11] Of note, mitochondrial impairment has also been associated with other psychiatric conditions, including depression, of which the patient also had a history.[17] Another aspect of the patient's case that suggested GWI were his allergies and skin sensitivities to multiple environmental and drug exposures. These features were consistent with multiple chemical sensitivity, which is a chronic condition similarly linked to mitochondrial dysfunction and highly prevalent in cases of GWI.[3,18,19] Based on these findings, the authors established GWI as a possible chronic symptom condition underlying the patient's presentation. Additionally, he was formally diagnosed with comorbid GAD.

Treatment Pathway

The patient was restarted on his home medications, including baclofen 20 mg 3 times per day, hydroxyzine 25 mg twice per day as needed, and duloxetine 20 mg twice per day. Vyvanse 60 mg daily was held, given that it had the potential to worsen the patient's anxious state in an acute setting. No additional medications were prescribed.

Outcomes

Hydroxyzine was beneficial in reducing the patient's acute anxiety and allergic reaction. The patient later reported a decrease in pain and additional reduction in anxiety after receiving duloxetine. The patient expressed gratitude after hearing the psychiatric team had reviewed his medical records, including his allergy and chronic pain history, as he was initially concerned that these would be disregarded. The patient was discharged home to his wife before his involuntary 72-hour hold expired, given the fact that he was not a danger to himself or others.

The patient's distress over having his physical symptoms dismissed was understandable and not unique to his case. GWVs have faced persistent challenges in gaining recognition for their health concerns.[13] GWVs have reported that validation and acceptance of their chronic symptoms have been helpful in developing and maintaining a therapeutic alliance with their treatment team.[20] The Veteran Affairs and Department of Defense Clinical Practice Guidelines for Management of CMI have highlighted person-centered care as an essential tool for decreasing anxiety in this patient population.[14]

Key Learning Takeaways

GWI has been characterized by persistent symptoms across several domains, including fatigue and sleep problems, pain, neurologic/cognitive/mood symptoms, gastrointestinal symptoms, respiratory symptoms, and skin abnormalities. Anxiety, among other psychiatric concerns, has been a well-documented feature of GWI. Thus, when evaluating GWVs in the psychiatric setting, it is important to consider GWI as an etiologic factor and employ a person-centered approach. Given the general lack of recognition of GWI, the authors have advocated for increased education among colleagues in the medical community.

REFERENCES

1. Department of Veterans Affairs. *Gulf War Illness and the Health of Gulf War Veterans: Scientific Findings and Recommendations.* Research Advisory Committee on Gulf War Veterans' Illnesses; 2008. Accessed April 28, 2025. https://www.va.gov/rac-gwvi/docs/committee_documents/gwiandhealthofgwveterans_rac-gwvireport_2008.pdf
2. Institute of Medicine. *Chronic Multisymptom Illness in Gulf War Veterans: Case Definitions Reexamined*. Washington, DC, United States: National Academies Press; 2014. DOI: https://doi.org/10.17226/18623
3. Steele L. Prevalence and patterns of Gulf War illness in Kansas veterans: Association of symptoms with characteristics of person, place, and time of military service. Am J Epidemiol. 2000;152(10):992–1002. DOI: https://doi.org/10.1093/aje/152.10.992
4. Fukuda K, Nisenbaum R, Stewart G, et al. Chronic multisymptom illness affecting Air Force veterans of the Gulf War. JAMA. 1998;280(11):981–988. DOI: https://doi.org/10.1001/jama.280.11.981
5. Ismail K, Lewis G. Multi-symptom illnesses, unexplained illness and Gulf War syndrome. Philos Trans R Soc Lond B Biol Sci. 2006;361(1468):543–551. DOI: https://doi.org/10.1098/rstb.2006.1815
6. Dursa EK, Cao G, Porter B, Culpepper WJ, Schneiderman AI. The health of Gulf War and Gulf era veterans over time. J Occup Environ Med. 2021;63(10):889–894. DOI: https://doi.org/10.1097/JOM.0000000000002331
7. Michalovicz LT, Kelly KA, Sullivan K, O'Callaghan JP. Acetylcholinesterase inhibitor exposures as an initiating factor in the development of Gulf War illness, a chronic neuroimmune disorder in deployed veterans. Neuropharmacology. 2020;171:108073. DOI: https://doi.org/10.1016/j.neuropharm.2020.108073
8. Butterick TA, Trembley JH, Hocum Stone LL, Muller CJ, Rudquist RR, Bach RR. Gulf War illness-associated increases in blood levels of interleukin 6 and C-reactive protein: Biomarker evidence of inflammation. BMC Res Notes. 2019;12(1):816. DOI: https://doi.org/10.1186/s13104-019-4855-2
9. Johnson GJ, Slater BCS, Leis LA, Rector TS, Bach RR. Blood biomarkers of chronic inflammation in Gulf War illness. PLOS ONE. 2016;11(6):e0157855. DOI: https://doi.org/10.1371/journal.pone.0157855
10. Koslik HJ, Hamilton G, Golomb BA. Mitochondrial dysfunction in Gulf War illness revealed by 31Phosphorus magnetic resonance spectroscopy: A case-control study. PLOS ONE. 2014;9(3):e92887. DOI: https://doi.org/10.1371/journal.pone.0092887
11. Golomb BA, Sanchez Baez R, Schilling JM, et al. Mitochondrial impairment but not peripheral inflammation predicts greater Gulf War illness severity. Sci Rep. 2023;13(1):10739. DOI: https://doi.org/doi:10.1038/s41598-023-35896-w
12. Golomb BA, Allison M, Koperski S, Koslik HJ, Devaraj S, Ritchie JB. Coenzyme Q10 benefits symptoms in Gulf War veterans: Results of a randomized double-blind study. Neural Comput. 2014;26(11):2594-2651. DOI: https://doi.org/doi:10.1162/NECO_a_00659
13. Bloeser K, McCarron KK, Merker VL, et al. "Because the country, it seems though, has turned their back on me": Experiences of institutional betrayal among veterans living with Gulf War illness. Soc Sci Med. 2021;284:114211. DOI: https://doi.org/10.1016/j.socscimed.2021.114211
14. Department of Veterans Affairs, Department of Defense. *Clinical Practice Guideline for the Management of Chronic Multisymptom Illness.* The Management of Chronic Multisymptom Illness Work Group; 2021. Accessed April 28, 2025. https://www.healthquality.va.gov/guidelines/MR/cmi/VADODCMICPG508.pdf
15. Ismail K, Kent K, Brugha T, et al. The mental health of UK Gulf War veterans: Phase 2 of a two phase cohort study. BMJ. 2002;325(7364):576. DOI: https://doi.org/10.1136/bmj.325.7364.576
16. Jeffrey M, Collado F, Kibler J, et al. Post-traumatic stress impact on health outcomes in Gulf War illness. BMC Psychol. 2021;9(1):57. DOI: https://doi.org/10.1186/s40359-021-00561-2
17. Jiang M, Wang L, Sheng H. Mitochondria in depression: The dysfunction of mitochondrial energy metabolism and quality control systems. CNS Neurosci Ther. 2024;30(2):e14576. DOI: https://doi.org/10.1111/cns.14576
18. Golomb BA, Han JH. Adverse effect propensity: A new feature of Gulf War illness predicted by environmental exposures. iScience. 2023;26(8):107363. DOI: https://doi.org/10.1016/j.isci.2023.107363
19. Gray GC, Reed RJ, Kaiser KS, Smith TC, Gastañaga VM. Self-reported symptoms and medical conditions among 11,868 Gulf War-era veterans: The seabee health study. Am J Epidemiol. 2002;155(11):1033–1044. DOI: https://doi.org/10.1093/aje/155.11.1033
20. Anastasides N, Chiusano C, Gonzalez C, et al. Helpful ways providers can communicate about persistent medically unexplained physical symptoms. BMC Fam Pract. 2019;20(1):13. DOI: https://doi.org/10.1186/s12875-018-0881-8