

Allergies Coinciding with Central Sensitization Syndromes (ACCeSS)

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Introduction

Significance of Reported Allergies: Many reported drug allergies are mislabeled side effects or misinterpretations, leading to suboptimal treatment, antibiotic resistance, and worse patient outcomes.¹

Central Sensitization Syndromes (CSS): CSSs are chronic pain conditions linked to altered sensory perception, including pain, fatigue, and neurologic dysfunction.² These patients may be more likely to misattribute medication side effects as allergies.

Previous Findings & Hypothesis: Prior research found high allergy reporting in interstitial cystitis and fibromyalgia—both CSS conditions.⁴ We hypothesized that other CSS diagnoses also correlate with increased allergy reporting, emphasizing the need for better allergy evaluation.

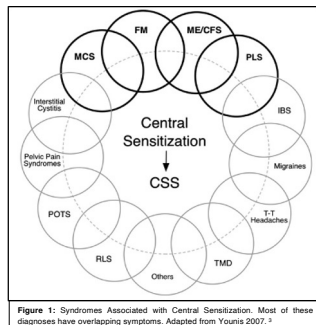


Figure 1: Syndromes Associated with Central Sensitization. Most of these diagnoses have overlapping symptoms. Adapted from Yunus 2007.⁴

Study Aims:

- Evaluate the association between CSS and high allergy reporting.
- Analyze allergy reporting trends across CSS conditions.
- Assess the clinical impact of allergy overreporting on treatment and outcomes.

Understanding this relationship may reduce unnecessary allergy labels and improve antibiotic selection and patient care.

Methods

- A retrospective study was conducted on patients admitted to three Corewell Health Hospitals in 2021 (Corewell Health William Beaumont University Hospital, Corewell Health Beaumont Troy, and Corewell Health Beaumont Grosse Pointe).
- The cohort included patients reporting at least one antibiotic allergy. Sixteen CSS conditions (7 defined as definite CSS, 9 as potential CSS) and 16 non-CSS control diagnoses were analyzed.
- For each group, prevalence rates were calculated for patients reporting 1 allergy, ≥10 allergies, and ≥20 allergies.
- Risk ratios comparing subgroup prevalence to all allergy reporters were generated.

ME/CFS (Myalgic Encephalomyelitis/Chronic Fatigue Syndrome); FM (Fibromyalgia); MCS (Multiple Chemical Sensitivities); PLS (Post-Lyme Disease); IBS (Irritable Bowel Syndrome); T-T (Tension Type); TMD (Temporomandibular Disorders); POTS (Postural Orthostatic Tachycardia Syndrome); RLS (Restless Leg Syndrome); Others including: irritable larynx syndrome, PTSD (Post Traumatic Stress Syndrome, non-cardiac chest pain (costochondritis), myofascial pain syndrome, reactive arthritis, and other pain syndromes.

Results

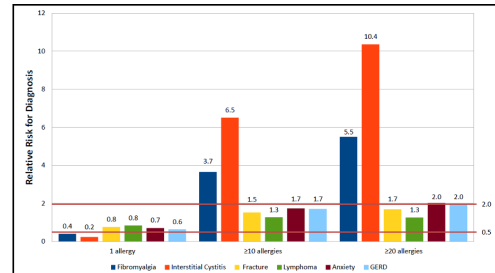


Figure 2: Relative risk for each diagnosis for a given number of reported allergies as compared to the risk in the entire population with reported antibiotic allergies

- Of patients with ≥10 allergies, 6 of 7 definite CSS and 6 of 9 potential CSS diagnoses had a risk ratio ≥3 (p<0.001). In the ≥20 allergies group, all 7 definite CSS and 2 potential CSS diagnoses showed risk ratios ≥6 (p<0.01) (none of the controls exceeded this threshold in either group).

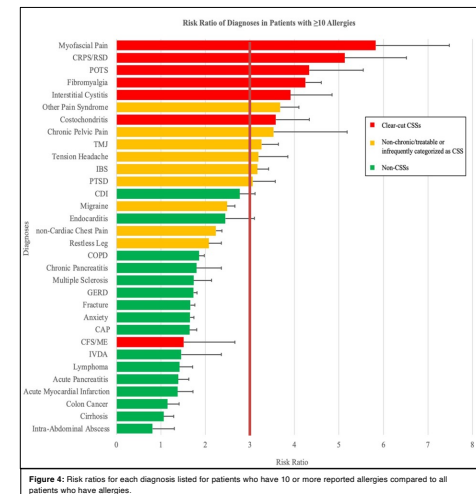


Figure 4: Risk ratios for each diagnosis listed for patients who have 10 or more reported allergies compared to all patients who have allergies.

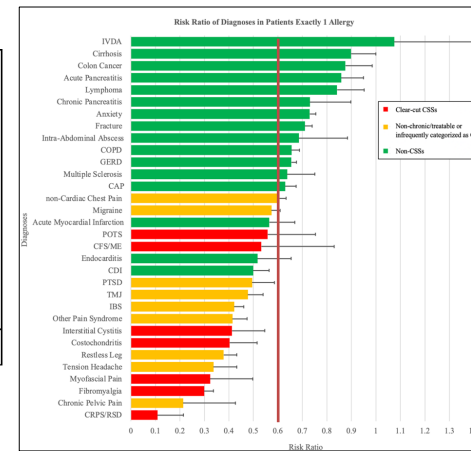


Figure 3: Risk ratios for each diagnosis listed for patients who have exactly 1 reported allergy compared to all patients who have allergies.

- Among patients with 1 allergy, all definite and potential CSS diagnoses were negatively associated (risk ratio ≤0.6), compared to only 3 control diagnoses meeting this criterion.

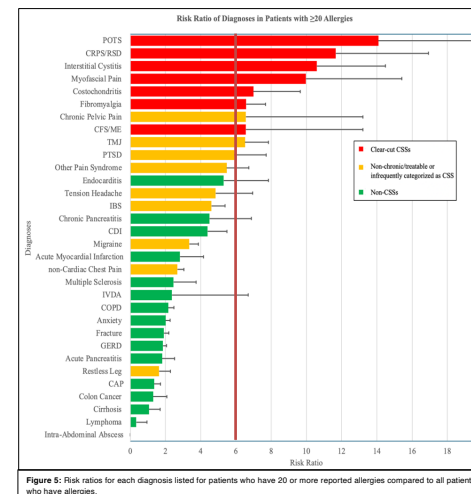
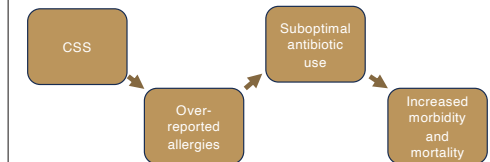


Figure 5: Risk ratios for each diagnosis listed for patients who have 20 or more reported allergies compared to all patients who have allergies.

Conclusions

- This study confirmed a strong association between CSSs and high numbers of reported allergies, which was both statistically and clinically significant.
- Among control diagnoses, endocarditis, CDI, and chronic pancreatitis showed some association with ≥10 and ≥20 allergies.
 - Endocarditis may contribute to allergy reports due to prolonged antibiotic exposure.
 - Chronic pancreatitis, a pain syndrome, aligns with CSS trends due to central sensitization.⁵
 - CDI's link may stem from altered microbiota leading to GI intolerance and antibiotic-related allergy labeling.⁶
- Notably, clear-cut CSS diagnoses had the strongest associations, with risk ratios up to 14.08.
- Future Directions: Multivariate analysis is needed to account for confounding variables and refine associations, such as those seen with endocarditis.
- The overreporting of sensitivities as allergies in CSS patients likely results in suboptimal antibiotic use, leading to increased morbidity and mortality. Improved management of reported allergies is essential to optimize care for CSS patients.



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