

Exploring the Psychiatric Burden of Complex Regional Pain Syndrome Type I Following Long Bone Fractures

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INTRODUCTION:

To investigate the development of psychiatric conditions following a CRPS type I diagnosis after musculoskeletal injuries, particularly long-bone fractures, as previous research has focused primarily on psychiatric disorders as risk factors for CRPS, with limited exploration of the subsequent onset of psychiatric conditions.

METHODS:

Data from over 600,000 adult patients obtained from the TriNetX US Collaborative Network who sustained long-bone fractures requiring surgical treatment between January 1, 2014 and January 1, 2023 were reviewed, comparing those diagnosed with CRPS type I within one year post-fracture to matched controls without CRPS. Matching criteria included age, sex, race/ethnicity, and body mass index, with a two-year follow-up period. Patients with pre-existing records of SSRI use, anxiety, mood, psychotic, substance use, or insomnia disorders were excluded.

RESULTS:

Among the 2,540 patients propensity score matched in each cohort, we found that CRPS patients exhibited a 1.7-fold increased risk of anxiety disorders (39% vs 23%, $p < 0.01$), a 1.6-fold increased risk of mood disorders (35% vs. 22%, $p < 0.01$), a 1.8-fold increased risk of insomnia (24% vs. 13%, $p < 0.01$), and a 1.4-fold increased risk of substance use disorders compared to controls (33% vs 24%, $p < 0.01$). However, no significant differences were observed in the incidence of suicide attempts or primary psychotic disorder diagnoses.

DISCUSSION AND CONCLUSION:

These findings highlight the complex interplay between CRPS and mental health, emphasizing the need for early psychiatric screening and intervention in patients diagnosed with CRPS type I following long-bone fractures. Further research is warranted to elucidate the underlying mechanisms associating CRPS to psychiatric comorbidities and to develop targeted therapeutic strategies aimed at improving overall patient outcomes.

Patient Demographic Characteristics (After Match)			
Characteristic	+CRPS		P
	N (Mean or %)	-CRPS (N (Mean or %))	
Age at Index	2,540 (52.3 ± 14)	2,540 (52.4 ± 14.4)	0.94
Sex			
Men	689 (27%)	674 (27%)	0.64
Women	1,726 (68%)	1,746 (69%)	0.55
Race & Ethnicity			
Hispanic or Latino	192 (8%)	191 (8%)	0.96
Asian	27 (1%)	25 (1%)	0.78
Black or African American	313 (12%)	321 (13%)	0.73
White	1,897 (75%)	1,884 (74%)	0.68
Other Race	64 (3%)	66 (3%)	0.86
BMI			
0-18.5 kg/m2	93 (4%)	81 (3%)	0.33
18.5-25 kg/m2	573 (23%)	577 (23%)	0.89
25-30 kg/m2	670 (26%)	682 (27%)	0.70
30-35 kg/m2	498 (20%)	501 (20%)	0.92
35-40 kg/m2	275 (11%)	257 (10%)	0.41
At least 40 kg/m2	188 (7%)	168 (7%)	0.27

Table of Risk Ratios - 2-Year F/U (Before Match)							
Measure	+ CRPS (N)	- CRPS (N)	+ CRPS Proportion	- CRPS Proportion	Risk Ratio	95% CI	P
Anxiety Disorders	991	107162	39.0%	17.7%	2.2	(2.1, 2.3)	<0.01
Mood Disorders	891	105472	35.1%	17.4%	2.0	(1.9, 2.1)	<0.01
Primary Psychotic Disorders	59	10824	2.3%	1.8%	1.3	(1.0, 1.7)	0.04
Insomnia	606	72087	23.9%	11.9%	2.0	(1.9, 2.2)	<0.01
Substance Use Disorder	844	118998	33.2%	19.7%	1.7	(1.6, 1.8)	<0.01
Suicide Attempt	<10	833	0.4%	0.1%	2.9	(1.5, 5.3)	<0.01

Table of Risk Ratios - 2-Year F/U (After Match)							
Measure	+ CRPS (N)	- CRPS (N)	+ CRPS Proportion	- CRPS Proportion	Risk Ratio	95% CI	P
Anxiety Disorders	991	584	39.0%	23.9%	1.7	(1.557, 1.850)	<0.01
Mood Disorders	891	557	35.1%	21.9%	1.6	(1.461, 1.751)	<0.01
Primary Psychotic Disorders	59	56	2.3%	2.2%	1.1	(0.734, 1.512)	0.78
Insomnia	606	337	23.9%	13.3%	1.8	(1.593, 2.030)	<0.01
Substance Use Disorder	844	598	33.2%	23.3%	1.4	(1.291, 1.543)	<0.01
Suicide Attempt	<10	<10	0.4%	0.4%	1.0	(0.417, 2.398)	1.00