

Differences in Patient Characteristics for Developing Acute Pain versus Chronic (Neuropathic) Pain Following Burn Injury

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Introduction

- Pain, unrelated to the initial thermal trauma itself, can result following burn injury, and prolong the recovery/rehabilitation phase of the patient's care.
- This pain, after discharge from the Burn Unit, may be acute and self-limiting or chronic, and contribute to long-term patient morbidity.

Objectives

- The purpose of this study was to compare burn patients who had after discharge from the Burn Unit, only acute pain to burn patients who developed chronic, neuropathic pain (CNP) and determine risks factors for progression from acute to chronic pain in the setting of a Burn Center.

Materials and Methods

Study design

- We performed an Institutional Review Board (IRB00213320) approved retrospective medical record review to collect a cohort of patients admitted to the adult burn center from January 1, 2014 through January 1, 2019.

Study population

Inclusion criteria

- Age ≥ 15 years,
- Sustained a burn injury and admitted to the Burn Center

Exclusion criteria

- Pre-existing neuropathic pain due to an underlying medical illness or medication.

- We stratified patients into two groups for comparison by duration of nerve pain following burn injury. The first group of patients had acute, self-limiting pain (acute pain group), and the second group of patients had CNP lasting greater than 6 months following onset of burn (chronic pain group).

- Pain was self-described clinically as shooting, stabbing, sharp, burning, tingling, pruritus, throbbing, numbness, intermittent and/or continuous dysesthetic sensations.

- Groups were then evaluated for demographic and clinical differences and compared to determine what factors were associated with progression from acute to chronic pain.

Results

		Acute pain group (n=30)		Chronic pain group (n=113)		
Comparison		N(%)	Median(IQR)	N(%)	Median(IQR)	p-value
Age			50(35-61)		54(39-62)	0.470
Sex						0.097
	Male	12(40)	---	67(59)	---	
	Female	18(60)	---	46(41)	---	
BMI		---	28.4(22-34)	---	26.7(24-41)	0.294
Current smoker		20(67)	---	83(73)	---	0.649
Alcohol abuse		9(30)	---	33(29)	---	>0.999
Recreational drug abuse		9(30)	---	30(27)	---	0.817
Prescription drug abuse		8(27)	---	14(12)	---	0.079
History of drug abuse		12(40)	---	35(31)	---	0.387
%TBSA		---	3(1-10)	---	6(3-25)	0.032
Full-thickness burns		8(27)	---	66(58)	---	0.004
Mechanism of burn						0.341
	Flame	20(67)	---	59(51)	---	
	Scald	8(27)	---	27(24)	---	
	Contact	1(3)	---	14(12)	---	
	Electrical	0(0)	---	7(6)	---	
	Chemical	0(0)	---	1(0.8)	---	
	Cold	0(0)	---	3(3)	---	
	Radiation	1(3)	---	1(0.8)	---	

Patients who progressed to the chronic pain group had a significantly more

- %TBSA [median(IQR)=6(3-25) vs. median(IQR)=3(1-10), p=0.032]
- Full-thickness burns [66/113 (58%) vs. 8/30 (27%) patients, p=0.004]

Patient follow-up was a median(IQR)=26.5(10-45) months.

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Patients who progressed to the chronic pain group had a significantly more

- Surgery [85/113 (75%) vs. 16/30 (53%) patients, p=0.042]
- Surgical procedures [median(IQR)=2(1-6) vs. median(IQR)=1(0-3), p=0.002]
- Complications [33/113 (29%) vs. 2/30 (6%) patients, p=0.014]

Conclusions

- 79% of burn patients with nerve pain (n=113/143) progressed from acute to chronic neuropathic pain
- Burn patients who progressed from acute to chronic neuropathic pain had significantly greater %TBSA burns, more full-thickness burns, had surgery, had more surgical procedures, and developed more complications than burn patients with only acute pain.
- Identifying patients with these risk factors early may allow for early intervention and reduce long-term patient morbidity.