

Pain and Emotional Problems in Soldiers with Polytraumatic Injuries

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Deployment and Casualties

As of 11/26/07

- More than 28,000 US combat wounded (>8,500 med-evaced)
- Wounds from IEDs, mortar rounds, landmines, and shrapnel account for 65% of combat related injuries
- Despite injury severity, 90% of the injured survive
- Pain is among the most frequent presenting complaints of returning OEF/OIF soldiers

Tampa OIF/OEF Pain Initiatives

- Inpatient Polytrauma Rehabilitation Center (PRC)
- Outpatient Polytrauma Day Program and Transitional Care Program
- Chronic Pain Rehabilitation Program (modified for polytrauma pts)
- Outpatient Blast/TBI Clinic
- Outpatient OIF/OEF Pain Clinic

Polytrauma Pain

- PRC recognizes pain assessment and management as an important part of rehab
- Created polytrauma pain team
- Pain Psychologist:
 - attends polytrauma medical rounds
 - serves on clinical and administrative teams
 - provides evaluation and treatment services
 - offers consultative and educational services to staff
- Pain Medical Management Consultation:
 - pain medication and medication adjustments
 - opioid pain medication tapers
- Pain Intervention Consultation:
 - ESIs, Nerve Blocks, and Pump implantations

Polytrauma Patient Description

(n = 190)

Mean Age: 27.7 (SD=7.5)

Mean Education: 12.7 (SD=1.2)

Gender:

Male 96%
Female 4%

Marital Status:

Married 45.8%
Single 42.6%
Separated/Divorced 10.5%

Ethnicity:

Caucasian 71.9%
African American 14.0%

Hispanic 11.2%
Other 2.8%

Military Service Branch:

Army 43.9%
Marines 28.3%
Navy 17.1%
National Guard 4.8%

Combat Related Injuries: 62.6%

Non-Combat Related Injuries: 37.4%

Mean deployment length: 6.5 months

Mean time since injury: 63.4 days

Polytrauma Injuries at Tampa PRC

- Combat Related Injuries: 62.6%
- Overall Method of Injury:
 - Motor Vehicle Accident: 37.4%
 - IEDs: 30.0%
 - Other (falls, cardiac arrest): 14.2%
 - Airborne shrapnel: 8.4%
 - Gunshot wounds: 8.4%
 - Mortar rounds: 7.9%

Types of Injuries

Mean Number of Injuries: 2.9 (SD=1.2)

➤ Most Common

- TBI: 77%
 - Closed: 51%
 - Penetrating: 31%
- Orthopedic: 60%
- Soft Tissue: 44%
- Vision: 31%
- Hearing: 25%

➤ Less Common

- SCI : 11%
- Limb Amputation: 6%
- Burns: 4%
- Fasciotomies: 5%

Cognitive Functioning

- Cognitive limitations are quite common among the PRC soldiers
- Average Admission Rancho Los Amigos Scale Score was 5.5 (SD = 1.7)
- 68% had Rancho scores below 7 at admission indicating moderate to severe TBI
- Generally if Rancho score is ≥ 7 patients can reliably report pain intensity score

Polytrauma Pain

- 89% experienced ≥ 1 persistent pain problem
- Valid verbal pain intensity ratings were obtained from 68% of those patients at admission
 - Mean pain score: 4.8 (SD: 2.7; Range: 0-10)
 - 66% had pain scores ≥ 4
- 68% were on Opioids at admission
- Average equianalgesic total dose: 56.6 mg of Morphine daily (range: 0mg to 965mg daily total)
- 67% of patients with pain, experienced it in more than one site
 - Mean # pain sites: 2.2 (SD: 1.4)

Polytrauma Pain Locations

Primary Pain Location

- Leg(s) = 25%
- Head = 20%
- Shoulder(s) = 15%
- Arm(s) = 12%
- Neck = 5%
- Low back = 5%

Second Pain Location

- Head = 23%
- Shoulders = 21%
- Arm(s) = 20%
- Leg(s) = 20%
- Low back = 18%
- Neck = 18%
- Hand(s) = 14%

- Approximately 51% of patients experienced pain related impairments

Pain Related Impairments

- Emotional functioning: 48%
- Physical activity/Therapy: 37%
- Family relationships: 24%
- Recreational activity: 23%
- Sleep: 22%
- Social activity: 20%
- ADLs: 18%
- Mobility: 10%
- Sexual functioning: 4%

Mental Health Issues

- 72% received a Mental Health consult
- 60% received a Mental Health Diagnosis:
 - Adjustment Disorder: 47%
 - PTSD: 30%
 - Insomnia: 23%
 - Depressive Disorder: 23%
 - Substance Abuse: 7%
 - Acute Stress Disorder: 6%
- Mental Health Treatment (81%)
 - Group: 74%
 - Individual: 53%
 - Medication: 51%
 - Family: 9%

Combat vs Non-Combat

	Combat (119)	Non-Combat (71)
Method of Injury	IED: 47.9%	MVA: 76.1%
Admission Pain	4.88	4.59
Primary Pain Location	Head: 23.5% Legs: 23.5%	Legs: 19.7% Shoulder: 15.5%
Opioid Dose at Admission	77.32mg morphine equivalent	25.38mg morphine equivalent
Discharge Pain	3.71	2.09
Opioid Dose at Discharge	50.53mg morphine equivalent	9.26mg morphine equivalent
PTSD % Yes	29.4%	5.6%

PRC Pain Management Approach

- Early and continued assessment and treatment
 - To minimize likelihood and/or severity of chronic pain problems

Multidisciplinary in nature

➤ Behavioral

- Pain Psychologist
- Therapists
- Nursing
- Family/Friends

➤ Medical

- R/O and manage causes
- Pain Consultation team
- Medications
 - Opioid reductions
 - Utilizing multiple types

Polytrauma Pain Management

- **Multidisciplinary in nature** (continued)
 - **Interventional**
 - Surgical Intervention
 - ESIs
 - Nerve Blocks
 - Pump Implantations
 - **Therapies and Modalities**
 - Physical Therapy
 - Occupational Therapy
 - Recreational Therapy
 - Acupuncture
 - Chiropractics

PRC Pain Management Components

- Medication management: 100%
- Pain evaluation and education: 100%
- Cognitive behavioral therapy: 23%
- Physical therapy: 67%
 - TENS unit: 8%
- Occupational therapy: 63%
- Nerve blocks: 6%
- Botulin Toxin injections: 3%
- Medication pump implantation: 2%

Polytrauma Pain Outcomes

- 36% were tapered completely off opioids
- Daily opioid dose was reduced by an average of 34.2mg, $F(1,174) = 18.1, p = .00$ (from avg. of 56.6mg to 23.3mg)
- Average pain intensity declined from 4.8 (SD=2.7) to 2.8 (SD=2.9) which was significant, $F(1,91) = 30.7, p = .00$
- However, pain continues to be a problem at discharge (percentage of pts with any pain problem only declined from 89% to 67%)
 - 21.1% still have pain levels >3 at discharge
- Ultimate course of pain in polytrauma is unknown

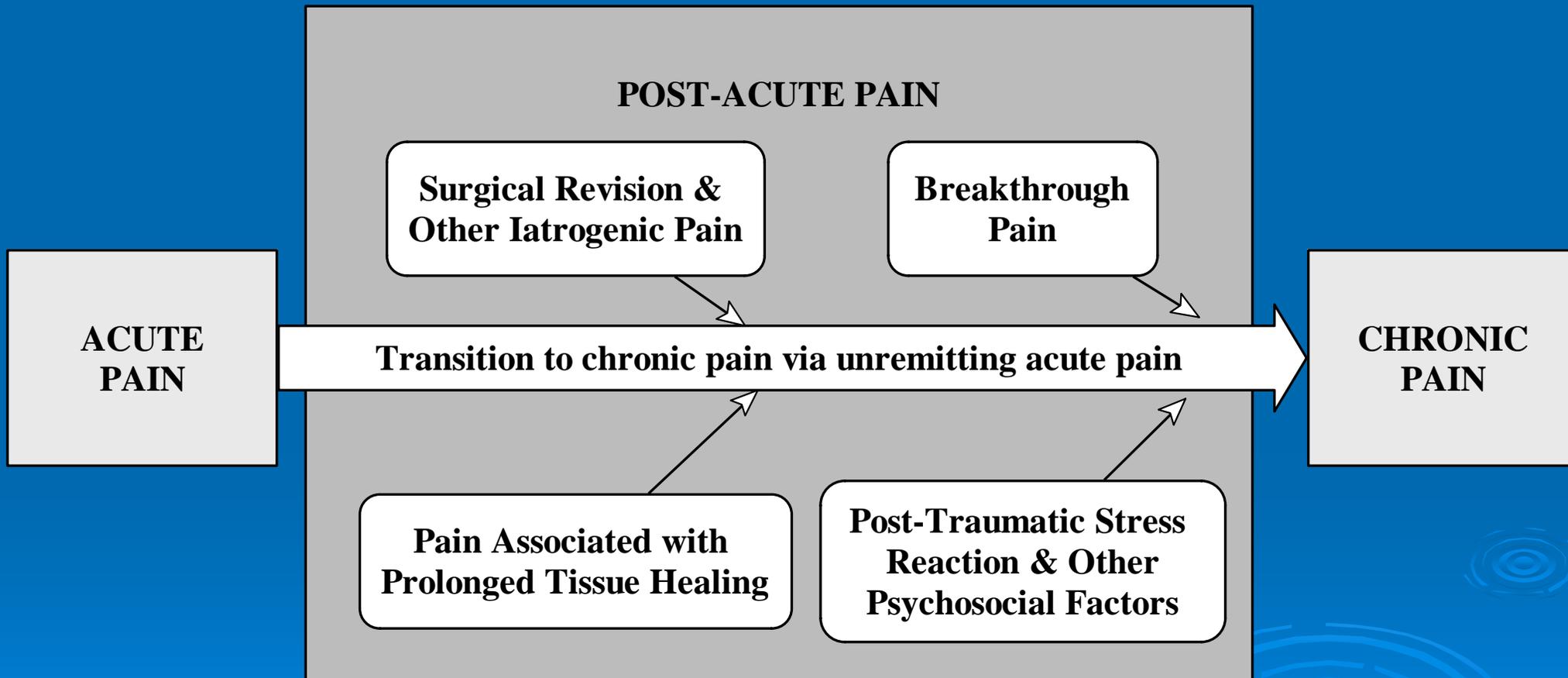
Pain Classification

- Current classification of pain is limited to
 - **Acute** vs
 - **Chronic** - pain without apparent biological value that has persisted beyond normal tissue healing time, which is usually taken to be 3 months (IASP, 1986)
- Acute and chronic pain likely occur *simultaneously* in polytrauma patients
- **Post-acute Category of Pain Classification**
 - Proposed to better classify polytrauma pain problems
 - A transitional stage of pain between acute and chronic pain
 - Allow for longer healing periods after complex/multiple trauma and repeated surgeries

Chronic Pain Risk Factors

- If pain continues after the post-acute phase, there is then risk for developing chronic pain
 - Approximately 30% of patients who experience acute back pain progress to chronic pain
(Von Korff & Saunders, 1996)
- Polytrauma patients are at even greater risk for developing chronic pain problems given
 - Continued pain despite rehabilitation
 - Complex/multiple injuries
 - Recurrent medical procedures/surgeries
 - Psychosocial factors affected by the pain
(Shipton et al., 2005, Sondenaa et al., 2001)₁₉

Polytrauma Pain: Possible Course



From Clark, Bair, Buckenmaier, Girona, and Walker, 2007

Case Example

➤ Demographics

- 28 y.o. married Caucasian female
- Army staff sergeant, active duty
- IED explosion in humvee in Iraq

➤ Injuries

- Burns on LLE
- ATK amputation of RLE (with severe HO)
- Cognitive impairments due to hypoxic/ ischemic brain injury
- Choreiform movements of BUE and face

Case Example Continued

➤ Pain Problems

- Stump pain, HO pain in RLE
- Phantom limb pain
- Admission average pain rating = 7
- Total opioid equianalgesic dose: 965.8mg/day

➤ Psychology Problems

- PTSD from blast (flashbacks, nightmares, hypervigilance)
- Depressive sx's due to body image and role changes
- Neuropsych testing found moderate impairment in executive functioning and significant impairment in verbal memory

Case Example Treatment

➤ Psychology

- CBT for PTSD and depression with psychologist
- Psychiatrist
 - Prescribed clonazepam and prazosin

➤ Pain

- Reduced opioid dose; duloxetine and pregabalin added
- CBT focusing on interactions between PTSD, depression, sleep, and pain problems
- Therapies: focusing on modalities and exercises for pain management (i.e. TENS unit)
- Treat HO with meds
- Continued to have difficulty with prosthetics training due to pain

Case Example Outcomes

- LOS = 30 days
- 78% reduction in opioid daily dose (212.5mg/day)
- Self image and PTSD symptoms improved
- Independent in ADLs and safety improved
- Memory and concentration improved
- Average pain level at discharge: 2
- 6 months follow up
 - Returned home with husband
 - Began prosthetics training at BAMC
 - 95% reduction in opioids
 - Wears prosthesis daily and utilizes unilateral crutch
 - Continues in therapy for PTSD symptoms
 - Will be on active duty for another year

Summary

- Evaluation and management of pain in OIF/OEF soldiers is a challenge due to:
 - Protracted nature of the OIF and OEF conflicts
 - Lengthy and multiple deployment episodes
 - Preponderance of blast injuries
 - Enhanced survival rates
 - High rates of psychological distress/disorders
 - High incidence of TBIs
 - Long range of continuum of medical care
 - High risk for chronic pain and CPS
 - Need for multidisciplinary pain management

Implications

- Pain needs to be consistently assessed and treated across the continuum of care
- Polytrauma patients likely are at increased risk for the development of chronic pain and CPS
- Implementation of screening and preventative practices may reduce percentage of patients who develop CPS
- Early identification and treatment of chronic pain and CPS improves outcomes and conserves healthcare resources
- Aggressive multidisciplinary pain management incorporating medical and behavioral pain specialists is needed

Thank You

Questions?

