Discover The Invisible: Pain and Depression in MS

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Overview

• Types of pain

• Causes and effects of pain in MS - What’s happening?

• Strategies for pain management and responses

• Types of depression

• Causes and effects of depression in MS - What’s happening?

• How depression is associated with anxiety and pain

• Identifying and treating depression
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Pain Basics and definitions

• “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage.” (IASP 1994)

• If a person is experiencing pain, that’s what pain is.

• Pain is an important factor in overall health related quality of life. (O’Connor, 2008)
Old Pain Models

Pain operates like a rigid fixed system and a particular injury generates a set amount of pain.

Pain is physical and mechanical so fix it!

Renaé Descartes 1664
Biopsychosocial Model

Pain Experience

Prior experiences
Attention/expectation
Mood (anxiety, depression)
Neurochemical and structural changes
Genetics
Sensitization (Peripheral and Central)

16th Century

17th Century

Descending, top down modulation
Ascending, bottom up information

Noxious stimulus

21st Century

National Multiple Sclerosis Society

CAN DO Multiple Sclerosis
All Pain comes from the Brain

You also have a pain system

Special nerves that warn us about problems in our body
Pain is an alarm

Pain is like an internal alarm that alerts us to danger in the body
Chronic Pain

Like a sensitive smoke alarm, when the body’s nerves get too sensitive, they turn on too often, creating excessive pain that interrupts normal living.

www.retrainpain.org
About Pain

• The amount of pain you experience does not necessarily relate to the amount of tissue damage you have sustained.

• You can have life threatening tissue damage and no pain.

• Nociception is neither sufficient nor necessary for pain.

Butler, Moseley, Explain Pain  2012
Types of pain

• Acute pain vs. Chronic pain

• Neuropathic pain unrelated to MS
• Nociceptive pain unrelated to MS

• Neuropathic pain due to MS
  • Neuralgias
  • Dysthesias
  • Painful tonic Spasms

• Nociceptive pain secondary to MS
Prevalence of pain in MS

• Overall pain prevalence 63%
• Headaches 43%
• Neuropathic extremity pain 26%
• Back pain 20%
• Painful spasms 15%
• Lhermitte sign 16%
• Trigeminal Neuralgia 3.8%

(Foley, 2013)
Pain Vocabulary to know

• **Neuropathic pain** - caused by a lesion or disease of the somatosensory nervous system.

• **Nociceptive pain** - arises from actual or threatened damage to non-neural tissue; due to the activation of nociceptors.

• **Musculoskeletal pain** - arises from actual or threatened damage to non-neural tissue; due to the activation of nociceptors.

• **Allodynia** - due to a stimulus that does not normally provoke pain

• **Hyperalgesia** - increased pain from a stimulus that normally provokes pain

• **Dysesthesia** - an abnormal sensation that is considered to be unpleasant.

• **Neuralgia** - pain in the distribution of a nerve or nerves.

International Association for the Study of Pain
Risk factors for pain in MS

- Not entirely clear in the research
- Reduced risk with relapsing-remitting MS
- Longer disease duration
- Age
- Greater severity of disease
- Gender- comparable risk in women & men
  - Women may have greater severity of pain

(Hadjimichael et al., 2005) (O’Connor et al., 2008)
Telling Your Doctor About Pain

Try to include the following:

• Where it happens-
  • Does it travel? Stay in one spot?

• When it happens
  • Sometimes? During certain activities? Always? In the morning? Late in the day?

• Describe the feeling as best you can

• What makes it better or worse?
Pain Descriptors

- Numbness
- Pins and Needles
- Burning
- Tingling
- Throbbing
- Stabbing
- Shooting
- Radiating
- Tightness
- Grabbing
- Weird stuff
- Electric Shock
- Aching
- Annoying
- Water trickling
- Gnawing
- Itching
- Crawling
- Itching
- Sore
- Constant
- Intermittent
More Pain types in MS

• Normal pain from something not related to MS -
  • People with MS still have people stuff happen! -
    accidents, emotional experiences, sports injuries, etc.

• Infections - Bladder infections
  • May seem like an exacerbation, fatigue, spasms,
    fatigue, fever

• Medication side effects
  • Headaches
  • Reactions to drugs or injection sites
Neuropathic pain in MS

• Central Neuropathic pain- pain consistent with a central nervous system lesion

• Pain in a neurologic distribution with altered sensation- “dysesthetic pain”

• Most common central neuropathic pain in MS
  • Extremity pain
  • Trigeminal neuralgia
  • Lhermitte’s sign
Neuropathic pain in MS
“noisy nerves”
Neuropathic Pain in MS

• Dysesthesias
  • Burning
  • Hyperesthesia
  • Lhermitte’s sign
  • MS Hug- banding – dysesthesia or spasticity

• Neuralgias
  • Trigeminal Neuralgia
  • Occipital Neuralgia
Addressing pain with Medications

• Treatment for Dysesthesias-
  
  Anti-convulsants- Neurontin (gabapentin)
    Lyrica (pregabalin)
    Tegretol (carbamazepine)
    Trileptal (oxcarbazepine)
  
  Anti-depressants- Cymbalta (fluoxetine)
    Savella (milnacipran)
    Amitriptyline
    Nortriptyline

  Topical patches and compounded preparations
    Lidoderm
    Compounded Preparations
Opioids for Pain Management

• For short term pain

• Not a preferred choice for long-term pain

• Tends to be less effective over time

• Addiction risk

• Some newer opioids are less addicting, but insurance is reluctant to approve them because of costs- “catch 22”
Musculoskeletal Pain in MS

• Nociceptive pain - arises from actual or threatened damage to non-neural tissue and is due to the activation of nociceptors.

• May be related to altered movement patterns.

• Back Pain

• Joint pain
Spasticity / Spasms

- Spasticity = a state of chronic increased tone
  Can result in contractures, tissue changes
  Not all spasticity is bad, e.g. transfers, gait.

- Spasm = a wave of increased tone

- Increased muscle tone due to an insult to the brain and/or spinal cord

- Spasticity tends to result in upper extremity flexion and lower extremity extensor tone.

- Spasticity can be painful
  Therapy, Stretching, Medications, Acupuncture, Dry Needling
Spasticity Management

• Change irritating or noxious stimulus

• Assess for infections
  
  Respiratory infection
  Bladder Infection

• Physical Therapy- stretching, exercise, safety with movement, orthotics

• Occupational Therapy – stretching, splinting, casting, activities of daily living
Spasticity Medications

- Baclofen
- Zanaflex (tizanidine)
- Benzodiazepines
  - Klonopin (clonazepam)
  - Ativan (Lorazepam)
  - Valium (diazepam)
- Dantrium
- Anticonvulsants, botox, cannabinoids
What goes with MS Pain?

• Greater pain severity is associated with poorer health-related quality of life. (O’Connor 2008)
• Interference with daily life
• General health, energy/vitality
• Social Functioning
• Poor Sleep
• Fatigue
• Attention/concentration
What goes with MS Pain?

- Mental Health- Mood- Anxiety- Depression
- Ability to walk / move around
- Deconditioning
- Normal Work
- Recreational activities
- Enjoyment of life
- Physical and emotional functioning (Hadjimichael 2007)
Pain Management

• **Education** - Reduces the threat associated with pain; positive effect on all of the input and response systems.

• **Movement** - Increases health of tissues; nourishes brain as it reestablishes fine functional sensory and motor representation;

• **Healthy Behaviors** - Medication, diet, CBT, relaxation strategies, love, spiritual health, physical therapy/activity
Exercise is Key

Yes, yes, yes—now, seriously—what can we do to improve our health!?

1. Exercise
2. Exercise
3. Exercise
4. Exercise
5. Exercise
6. Exercise
7. Exercise
8. etc.

ED FISCHER '08
Physical Therapy and Exercise

- Fatigue
- Depression
- Functional Mobility
- Safety
- Preventing Falls
- Ergonomics, Body Mechanics
- Pacing Activity
Addressing Pain with Behaviors

• Pain should be addressed through behaviors of person experiencing pain and the people sharing their lives with them.

• Positive Coping strategies

• Avoid catastrophizing- excessively negative and unrealistic thoughts about pain-correlated with changes in pain, as well as physical & psychological functioning (Jensen et al, 2010)
Thought Viruses

Thoughts and beliefs are nerve impulses too…

There are thought processes powerful enough to maintain a pain state.


“The CT scan couldn’t find it so it must be really bad.”

“Aunt Diedre had back pain, too. Now she’s in a wheelchair.”

“I don’t think I can take this anymore.”
Responding Positively to Pain

• Participating actively in your care plan
• Cognitive Behavioral Therapy
• Optimism
• Active movement, exercise, and therapy
• Socializing
• Wellness programs, gym activities
• Education- (try retrainpain.org)
• Doing what you CAN DO!
References

- www.Retrainpain.org
- www.painexhibit.com
- National MS society
- Explain Pain
- Dr. Ben Thrower, MD, Shepherd Center, talk on MS and pain for Multiple Sclerosis Foundation
- Dr. Dawn Ehde, PhD University of Washington, talk on UWtv series
- Backus, D, Increasing Physical Activity and Participation in People with Multiple Sclerosis: A Review. Archives of Physical Medicine and Rehabilitation 2016;97(9Supple 3);S210-7.
MS, Depression, and Pain

- Between 6 and 19% of patients with MS have both depression and pain

- Individuals who are depressed are more likely to report pain

- When both pain AND depression are present, treatment should target both
Depression and MS

In persons with MS age 18 to 45 there is a 25% chance one will develop a form of depression over the course of...

Depression is more common in MS than...

...of persons with MS will develop a form of depression in their lifetime

in the general population (people without MS)
in individuals with other long-term medical illnesses
General Population ≤ Multiple Sclerosis
Depression and MS

Depression is associated with…

- increased disease severity, including neurodegeneration – cell loss
- MS relapses
- co-occurring diagnoses such as PAIN, fatigue, anxiety, and cognitive changes
- life stress, such as financial stress
Depression

Biology
- physical health
- genetic vulnerabilities
- drug effects

Social
- peers
- family circumstances
- family relationships

Psychological
- coping skills
- social skills
- family relationships
- self-esteem
- mental health
Depression is less common early in the disease.

Higher rates of depression in RRMS may be suggestive of an inflammatory cause.

Depressive thoughts and hopelessness are more common in SPMS suggestive of a reactive cause.

Disability vs. Time
Types of Depression

- Adjustment Disorder
- Depression Due to Medical Condition
- Major Depressive Disorder
Diagnosing Depression

1. *Feeling down, depressed, or hopeless
2. *Anhedonia – Little interest or pleasure in the things you can do
3. Feeling bad about yourself, such as feeling like a failure or that you’ve let yourself or others down
4. Fatigue
5. Change in sleep – trouble falling asleep, or sleeping too much
6. Changes in thinking skills: concentration and memory
7. Moving and speaking slowly or being fidgety or restless
8. Change in appetite
9. Thoughts of suicide or hurting yourself
MS, Depression, and the Brain

Anatomical changes have been noted in the brains of depressed individuals with MS. Specifically, atrophy (cell loss) and increased number of lesions in frontal and temporal areas of the brain.
MS, Depression, and the Brain

- **Reactive**: Negative emotions or thoughts activate the amygdala, which in turn activates the HPA axis via the hypothalamus. Glucocorticoids are released reactivating the amygdala.

- **Immune Mediated**: molecules that are associated with inflammation, proinflammatory cytokines, also activate the HPA axis. Elevated levels of these molecules have been reported in MS.

[Image of HPA axis diagram with connections between hypothalamus, pituitary gland, adrenal gland, amygdala, hippocampus, and prefrontal cortex.]

MS, Depression, and the Brain

In MS, immune changes are thought to occur before depression

**HOWEVER**

Depression can impact the immune system, so the impact might be bidirectional.

HPA activation in persons with MS has been linked to increased neurodegeneration.

In persons without MS, increased HPA activation has been linked to cell death in the hippocampus and prefrontal cortex.
MS, Depression, and Anxiety

Approximately half of depressed individuals with MS also experience anxiety.
Anxiety disorders are 3x greater in MS than the general population.

Anxiety alone is associated with increased risk of excessive alcohol use.

Anxiety can exacerbate cognitive dysfunction, specifically processing speed.
MS, Depression, and Anxiety

When anxiety and depression occur together…

• Thoughts about self-harm are more prevalent

• Individuals experience more social dysfunction

• Individuals experience and report more pain
Do a Self-Test

Over the past 2 weeks, how often have you been bothered by any of the following problems?

<table>
<thead>
<tr>
<th>Problem</th>
<th>Not at all</th>
<th>Several days</th>
<th>More than half the days</th>
<th>Nearly every day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Little interest or pleasure in doing things (the things you CAN DO)</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Feeling down, depressed, or hopeless</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Score of 3 or more? Consider talking to a medical provider.
Next Steps: Treatment

• Depression is underdiagnosed and undertreated

• One study’s findings:
  • Up to 2/3 of MS patients with depression receive no treatment
  • Of those that did receive an antidepressant, only 25% were given an adequate dose

Kalb, 2010; Sadovnick et al., 1991; Stenager & Stenager, 1992; Mohr et al., 2006
Next Steps: Treatment

Treatment Options:

• Psychotherapy: CBT or ACT
• Medication
• **Best**: Medication + Psychotherapy
Cognitive Behavioral Therapy (CBT)
Summary

• Depression is common in MS
• Depression may be caused by the disease, a reaction, or both
• Depression co-occurs with other diagnoses such as anxiety or pain
• Depression is underdiagnosed and undertreated, BUT it can be treated
• Treatment can be medication, talk therapy, or both
Questions/Comments

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