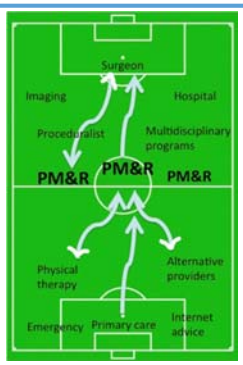
Allina Health

Managing Spinal Problems a Physical Medicine and Rehabilitation Perspective

Jackson Maddux, MD, FAAPMR

Where Outpatient Physiatry (PM&R) fits into the larger picture



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Oh so many ways to make it...

Physiatry Philosophy of Practice

- To examine patients and do testing to find a specific cause of pain which can, ideally, be resolved Non-Operatively.
- The goal of any physiatrist is to improve function and quality of life.
- Use of physical therapy, physical modalities, medications, and injections.
- Refer to surgeon as last resort

Physiatry: a brief History

- Pioneered by Frank Krusen at the Mayo Clinic 1936
- Recognized by the American Board of Medical Specialties in 1947
- Grew rapidly after WWII due to amputee population
- Today includes around 9000 practitioners worldwide

Spine Team Scope of Practice

Spine Care team and Pain management
Spine line: 800-827-8313

- Non-operative spine care
- Lumbar Spine Injections
- Joint injections: SI, hip, shoulder, etc
- Intramuscular injections
- Minimally invasive procedures – RFA (some hospital based clinics)
- Cervical injections – (some hospital-based clinics)

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Non-operative spine care

Spine statistics:
Up to 40% of adults suffer back pain lasting more than a day at least once per year

2nd most common illness-related reason given for a missed workday

most common cause of disability.

Work-related back injury is the number one occupational hazard.
Prognosis better with supportive work environment.

7

Risk Factors for Spine Pain

- Smoking
- Weight
- Posture
- Sedentary lifestyle
- Arthritis
- Twisting type sports (golf)

10

Siebens Domain Management Model: A paradigm for assessment/treatment in PM&R

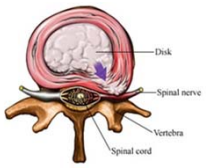
- I: Medical & Surgical issues
  - Body: Diseases, symptoms & prevention
- II: Mental Status/ Emotional Coping
  - Mind: Communication, emotions, coping mechanisms
- III: Physical function
  - Activities: ADL's, hobbies, activities, work/work environment
- IV: Living Environment
  - Surroundings: Dwelling, family/community support, work

https://static1.squarespace.com/static/5b4931e2da02bc543c70675b/t/5baa5043085229e608f917d4/1537888323595/SDMM+Guidelines+for+Use+FINAL2+9.24.2018.pdf

8

Causes of Back Pain

- Most of the time: muscle strains
- Rarer causes:
  - Disc Hernia
  - Facet Syndrome
  - Infection
  - Osteoporosis related compression fx's
  - Abdominal pathology (referred pain from kidneys, aorta, pancreas, psoas, etc.)
  - Tumor/cancer



11

PM&R philosophy for medications and treatments

- To find a specific cause of pain which can then ideally be resolved Non-Operatively in order to improve Quality of Life and improve function.
- PMR focuses on finding and resolving the Cause of pain.
- Pain Management focuses on managing the Pain.
  - -Chronic Pain Management involves ongoing prescription of narcotics and other medications to manage pain. Not necessarily focused on function
- I do not prescribe long acting narcotics since long term, they cause impairment in multiple ways.
  - Moulin DE, Iezzi A, Amireh R, et al. Randomised trial of oral morphine for chronic non-cancer pain. Lancet 1996; 347: 143-147
  - Erickson j et al. Critical issues on opioids in chronic non-cancer pain: an epidemiological study. Pain. 2006 Nov;125(1-2):172-9.

9

Treatment for Back Pain

- SHORT rest (no more than a day or two)
- Pain medications for 2-3 days if severe
- Muscle relaxants – Baclofen and Tizanidine
- Anti-inflammatories WITH tylenol (up to 4x more effective than pain meds!)*
- Physical therapy
- Injections
- Surgery

* https://www.nsc.org/Portals/0/Documents/RxDrugOverdoseDocuments/Evidence-Efficacy-Pain-Medications.pdf

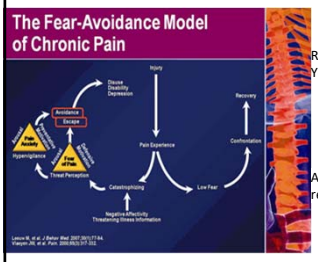
12

Treatment for Back Pain: Physical Therapy

- THE MOST IMPORTANT MODALITY
- Focus needs to be on ACTIVE therapy
  - Cardiovascular oriented, not massage, etc.
- Core stabilization
- McKenzie protocol
- Flexion/Extension based
- Useful adjuncts: heat/ice, E-stim, deep tissue massage, ultrasound, joint mobilization, medX

13

Fear-Avoidance



Resources for more information
Youtube search:
1) "TEDxAdelaide Lorimer Moseley Why Things Hurt"
2) "Tame The Beast — It's time to rethink persistent pain"

Also: Tamethebeast.org - drop down menu "useful resources"

http://www.anatomy-physiotherapy.com/images/articles/p3/f513/Slide09.png
https://www.medscape.org/viewarticle/726141_transcript

16

PT: how it can help

Motion is lotion

Gradual & safe return to activities

A PT is an expert in musculoskeletal treatment who can help determine if something else is going on (stress fracture, non-healing sprain, abnormal movement, etc).

Help with fear-avoidance development - help patient know that it IS safe to move

http://thefirstrehab.com/wp-content/themes/thefirstrehab/images/F83.jpg
http://a360-wp-uploads.s3.amazonaws.com/wp-content/uploads/ptproduc/2014/10/prehabilitation-466x310.jpg
https://nekpt.com/wp-content/uploads/2015/01/IMG_20150121_162047_227.jpg

14

Other Alternatives

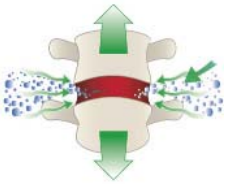
Tai Chi
Chiropractic
Yoga
PiYo
Water Aerobics
Feldenkrais
Alexander Technique
Egoscue Technique

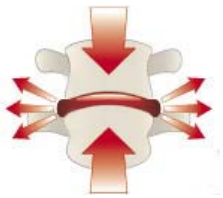
17

Why Movement matters

In with the good…

…Out with the bad





Smoking (nicotine) affects this by limiting blood flow to arterioles on the outside of the disc

https://www.physiology.org/doi/abs/10.1152/ajpheart.1997.272.5.H2337?journalCode=ajpheart

15

Tai Chi

A type of martial art. Taught widely and consistently throughout the world

The most common type seen today has its origins in the 1670's.

A gentle and safe adjunct modality following the building of a good foundation with PT.

Many studies have shown health benefits beyond helping back pain.

- Hall, A. M., et al, J. (2011), Tai chi exercise for treatment of pain and disability in people with persistent low back pain: A randomized controlled trial. Arthritis Care Res, 63: 1576–1583.
- Fransen, M., et al, J. (2007), Physical activity for osteoarthritis management: A randomized controlled clinical trial evaluating hydrotherapy or Tai Chi classes. Arthritis & Rheumatism, 57: 407–414. doi:10.1002/art.22621
- Fuzhong Li, et al; Tai Chi and Fall Reductions in Older Adults: A Randomized Controlled Trial, The Journals of Gerontology: Series A, Volume 60, Issue 2, 1 February 2005, Pages 187–194, https://doi.org/10.1093/gerona/60.2.187

18

Treatment for Back Pain: A Word on Chiropractic

- Several studies over the years have shown short term benefits for ACUTE low back pain.
- Other studies have shown no benefit with chronic low back pain
- Find a chiropractor who will communicate with the physician
- Initial treatment should be 4-6 sessions and then re-check with physician on progress

19

Alexander Technique

Invented by F.M. Alexander in the 1890's

Focused on awareness strategies applied to conducting oneself while in action

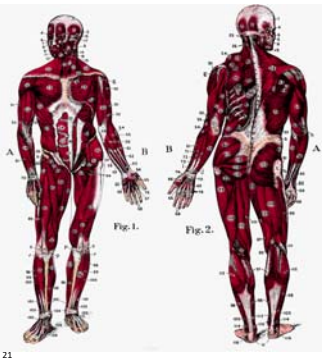
Several studies indicate can help reduce LBP

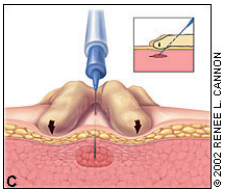
- BMJ study indicated 80% reduction in non-specific chronic LBP
  - Little P et al (2008). British Medical Journal 337:a884.

More info: https://amsatonline.org/aws/AMSAT/pt/sp/home_page

20

Another way to treat muscle spasms: Intramuscular Injections





21

Intramuscular Injections

- AKA: trigger point injections
- Helpful for patients who have failed other modalities
- Technique important
- Various injectates used
  - no difference found in multiple studies
- Travell & Simons for reference

22

Intramuscular Injections

- MUST always combine with PT
  - Need to retrain muscles that have developed new firing patterns
  - Need to undo poor adaptations
  - Spasms return quickly without PT
- My philosophy on injectates
  - First: do no harm
  - Avoid Steroids: atrophy leading to decreased function

23

Intramuscular Injections: My technique

- Find the trigger point
  - Twitch
  - Radiating pain/tingling/burning
- Place needle in center
- Pepper area
  - 1% lidocaine
- Wait a few minutes
- Find other "sub" trigger points
- Follow up 1-2 weeks & repeat as needed
- PT appointment within 24-48 hours in an ideal world

24

Some reasons why TPI's fail

- Inject only latent trigger point
- Inject only the area of referred pain
- Inject the taut band & miss trigger point
- Inject irritating solution (particulate steroid)
- Overlook other active TPs nearby
- No active motion after TPI
- No stretching at home after TPI

25

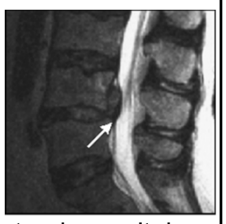
Intramuscular Injections: Risks/Contraindications

- Bleeding
- Infection
- Muscle/nerve damage
- Avoid in active local infection
- Saline can work in people allergic to lidocaine etc.
- Avoid Massage for 24 hours
  - Sudden lactic acid release = nausea/vomiting

26

Disc Hernias

- Can cause axial pain alone
- Can also cause "sciatica"
  - Radiating pain and/or weakness into leg
- Need MRI to identify exact location
- CT scan with contrast in patients who can't do an MRI (pacemakers, deep brain stimulators etc)



27

When to Order a MRI or CT

- An imaging study should be used for:
  1) Proving what you already know from history and physical exam
  2) Changing what you are going to do, depending on the results (injections, surgery referral, etc.)

For a referring physician: if you aren't sure of what you are looking at, there is no need to order an imaging study ahead of time

28

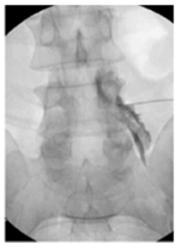
Treatment for Back Pain: Injections for Disc pathology

- Epidural Steroid Injections
- Transforaminal: specific
- Interlaminar: more medicine spread, best for axial or discogenic pain, as well as stenosis (if there's space)
- Treatment, not a fix
- Several studies over the years have shown short term benefits.

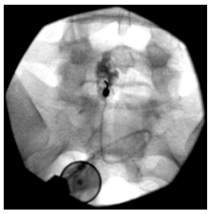
29

Epidural Steroid injections

Transforaminal



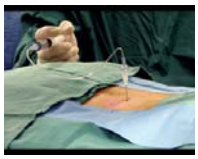
Interlaminar



30

Epidural Steroid Injections





31

Epidural Steroid Injections: My Philosophy

- Helps to remove the "roadblock" on the way to recovery
- Designed to reduce inflammation, not necessarily pain
- Makes it easier for patients to participate in PT
- Improves tolerance for activities
- Many patients need up to 2 injections, Rarely need more than 3 (stenosis).
- Stenosis: mounting evidence that injections are diagnostic only (LESS trial 2015*). Can be useful to consider for (very) short term relief. Surgery can help if PT doesn't.

* https://www.nejm.org/doi/full/10.1056/NEJMoa1313265

32

Injection "Medical Guidelines", AKA: THE RULES!!

Therapeutic Epidural Steroid Injection (ESI) of the cervical or lumbar spine may be indicated when all of the following criteria are met:

1: Radicular pain (cervical or lumbar) or neurogenic claudication (lumbar) with associated functional impairment

2: Evidence of nerve root compression or spinal stenosis (central or foraminal) is seen on an advanced imaging study (MRI or CT) and correlates with the clinical findings*

3: The pain has not responded to at least four (4) weeks of appropriate conservative management, unless there is evidence of radiculopathy, in which case ESI may be performed following two (2) weeks of conservative management.

http://www.aimspecialtyhealth.com/PDF/Guidelines/2019/May18/AIM_Guidelines_MSK_Interventional-Pain-Management.pdf

33

More "Guidelines"

Indications other than those addressed in this guideline are considered not medically necessary, including but not limited to the following:

1) Thoracic level ESI performed for thoracic pathology

2) Moderate to severe myelopathy on clinical exam

3) Myelopathy associated with intramedullary cord signal change on T1 or T2 weighted MRI

4) Isolated axial neck pain or low back pain

34

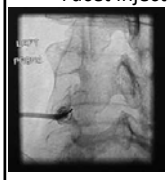
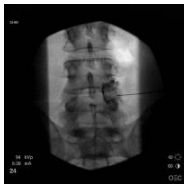
Other Non-surgical Techniques

- Facet Injections: +/- efficacy in ACUTE low back pain. No good evidence of efficacy in chronic LBP
- Rhizotomy: cauterizing medial recurrent branch into facet joints. Potential longer term tx than facet injection.
- SI joint injections: can help with SI joint pain when other pathologies ruled out.
- Nucleoplasty: new/old idea "poor man's microdiscectomy." Currently controversial.
- LASER microdiscectomy: significant risks due to technique & expensive equipment. No long term studies. Not usually covered by insurance.

35

Other procedures: Facet procedures

Facet injections

Facet Injections: +/- efficacy in ACUTE low back pain. No good evidence of efficacy in chronic LBP

36

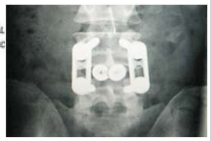
Rhizotomy

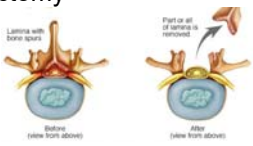
- Rhizotomy: cauterizing medial recurrent branch into facet joints.
- Some controversy in regard to efficacy. Can be considered if everything else has been tried before/ruled out.
- - From the Cochrane review: "the current evidence for RF denervation for CLBP is very low to moderate in quality"
- - Cochrane again: "limited evidence that radiofrequency denervation offers short-term relief for chronic neck pain of zygapophyseal joint origin and for chronic cervicobrachial pain"
- https://www.cochrane.org/CD008572/BACK_radiofrequency-denervation-chronic-low-back-pain
- https://www.cochrane.org/CD004058/BACK_radiofrequency-denervation-for-neck-and-back-pain

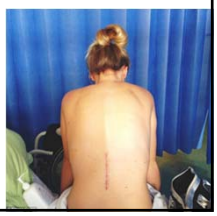
37

Common Back Surgeries

- Microdiscectomy
  - Simple disc hernias
- Fusion
  - Multilevel DJD in spine/trauma
- Laminectomy
  - stenosis







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https://www.mayoclinic.org/-/media/kcms/gbs/patient-consumer/images/2013/11/15/17/37/ds00515_ds00697_my00674_im04364_mcdc7_lumbar_laminectomy_jpg.jpg
https://i2.wp.com/www.sgsc.net/wp-content/uploads/2015/09/pine-img.jpg?ssl=1

The Guidelines: Facet Procedures

Procedures must be performed with image guidance, either fluoroscopy or CT

Patients must meet ALL of the following criteria:
- o Moderate to severe pain with functional impairment of at least 3 months' duration
- o Predominant axial pain that is not attributable to radiculopathy (with the exception of synovial cysts), myelopathy, or neurogenic claudication
- o Physical exam findings which are consistent with the facet joint as the presumed source of pain
- o Absence of non-facet pathology that could explain the source of the patient's pain, such as fracture, tumor, or infection
- o Absence of prior surgical fusion at the proposed level
- o Lack of improvement or resolution following at least 6 weeks of conservative management

http://www.aimspecialtyhealth.com/PDF/Guidelines/2019/May18/AIM_Guidelines_MSK_Interventional-Pain-Management.pdf

38

Summary

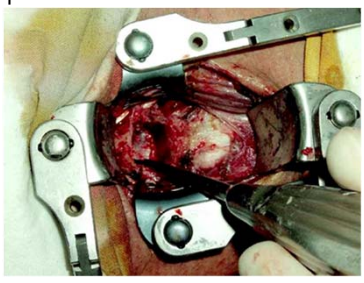
- PM&R, AKA Physiatry, is a specialty incorporating multiple disciplines
- Team-oriented approach
- Use of diagnostics and PT to assess/treat cause of patients' complaints
- Occasional use of injections for both diagnostic and therapeutic purposes
- Provide guidance on improving function and quality of life

41

Surgery:

- Obviously the last option….

Except for:
- cauda equina syndrome
- progressive loss of motor strength
- Severe, intractable pain.
- Unstable spine



39

Questions?

Spine Line: 800-827-8313

The pilot suffered three cracked vertebra, but he made a full recovery

http://i.dailymail.co.uk/i/pix/2010/09/14/article-1311828-0B2D77C6000005DC-701_964x466.jpg
https://aviation-safety.net/wikibase/wiki.php?id=76463

42