MRAD 240: Specialized Imaging 1

Injections -What and Where Do We Inject?

MRT Program

Objectives

- Define the indications and contraindications of performing a joint injection
- List the medications used in joint injections
- List the joints where injections can be performed

What is a Skeletal Injection?

- Injection into a musculoskeletal structure
- Diagnostic imaging equipment used
  - Done under fluoroscopy or ultrasound
    - We still help out in U/S guided exams sometimes!
- Usually uses some form of radiographic contrast
- Performed under aseptic conditions by a radiologist
- Tech's role is vital to success of procedure

Why do we inject?

- Diagnostic
  - Localize the source of pain
  - Find infection
  - Surgical planning

- Therapeutic
  - Pain relief
  - Slow progression of pathologic processes

Indications

- History on the requisition
  - Pain
  - Arthritis (Rheumatoid or Osteoarthritis)
  - Weakness in lower limbs
  - Crepitus (joints grinding)
  - Infection or crystals in the joint

What structures can we inject?

- Joints
- Bursae
- Tendon sheaths
- Epidural space
- Spinal nerve roots
- Intervertebral discs
- Cysts

Injectable medications

- Local anesthetic
- Radiographic contrast
- Negative contrast (rarely used)
- Corticosteroid
- Artificial synovial fluid (Viscosupplementation)

Local Anesthetic

- Usually Lidocaine or variant thereof
- Freezes skin for 1-2 hours
- Removes pain sensation, but not pressure
- Causes nerve endings to fire once and then shut down. This means it hurts when it is injected.
- Injected into skin at beginning of procedure.
- Added to corticosteroid to provide pain relief right at site of injection



LIDOcaine HCl Injection 1%-Pharmacy-Birth Supplies Canada

Radiographic Contrast

- Outlines internal structures
- Allows the radiologist to confirm the needle location/placement before administering medication
- Provides legal photographic documentation that the medication was put in the right place.
- Modern contrast much less reactive in the body = fewer adverse reactions.
- Non-ionic, iodinated. Examples:Isovue, Omnipaque, Visipaque



http://www.clintpharmaceuticals.com/



https://undergradimaging.pressbooks.com/app/uploads/sites/66470/2017/10/Fluoro-early-phase.png

Negative Contrast

- What do I mean when I say negative contrast?
  - Subtractive density on the image
- Air is most common. Oxygen & CO2 may also be injected.
- Usually used for people who react to iodinated contrast
- Double contrast exams include negative and positive agents.

Corticosteroid

- Cortisone
- Steroidal anti-inflammatory
- Not to be confused with non-steroidal anti-inflammatories (NSAIDs) like Ibuprofen or Aspirin
- Injecting right at the source of pain means a stronger effect right where it is needed
- Triamcinolone (Kenalog), Depomedrol
- 1cc for large joints, 0.5cc for small joints



http://sterimaxinc.com/products/injectables

Contraindications

- Pregnancy
  - Even for injections that don't use radiation, we don't give triamcinolone in the 1st trimester
- Prior adverse reaction to contrast
  - MRI contrast may be an option
  - Air contrast may be an option
- Active infection requiring antibiotics
  - Cortisone has a dampening effect on the immune system