Arthrogenous disorders of the TMJ

Seena Patel DMD, MPH
Assistant Professor, Associate Director of Oral Medicine
Arizona School of Dentistry & Oral Health, A.T. Still University, Mesa, AZ
Southwest Orofacial Group, Phoenix, AZ
Diplomate, American Board of Oral Medicine
Diplomate, American Board of Orofacial Pain
Which of the following represents an arthrogenous disorder?

- Pain in the masseter muscle
- An electric shock-like pain around tooth #30
- A throbbing pain around the left eye
- Crepitus and pain around the left TMJ

When poll is active, respond at PollEv.com/seenapatel085.
Text SEENAPATEL085 to 22333 once to join.
75 yo female presents with pain on the left side

Onset: 1 month ago
Location: Left joint
Quality: Dull ache
Frequency: Daily
Attack duration: A couple of hours
Severity: 5/10
Ameliorating factors: Diclofenac
Exacerbating factors: Yawning, brushing her teeth

Associated symptoms:
- Ear pain
- Locking
- Frequent urination
- Poor digestion
- Stomach gas
- Heartburn problems
- Insomnia
- Low energy
- Chronically tired
- Osteoarthritis
- Poor circulation
- Wears glasses
- Cancer (skin cancer; both legs)
- Overweight

Review of Systems:
- Frequent urination
- Poor digestion
- Stomach gas
- Heartburn problems
- Insomnia
- Low energy
- Chronically tired
- Osteoarthritis
- Poor circulation
- Wears glasses
- Cancer (skin cancer; both legs)
- Overweight
Arthritic disorders

1. Arthralgia/Capsulitis
2. Localized osteoarthritis
3. Polyarthritis
4. Synovial chondromatosis
5. Chronic pain associated with TMJ dysfunction and joint arthrosis
6. Idiopathic condylar resorption
Arthralgia

- Painful joint without osseous changes

- Presence of joint tenderness to palpation

- Other terms: capsulitis, synovitis, retrodiscitis, joint effusion
Localized osteoarthritis

Clinical features: arthralgia, crepitus
- Often presents unilaterally

Imaging findings: degenerative joint changes
- Decreased joint space
- Flattening of the articulating surfaces
- Bony spurs
- Sclerosis
- Erosive bony lesions

High suspicion in patients >50 years
## Case: Musculoskeletal Exam

<table>
<thead>
<tr>
<th>Palpations</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rectus capitus R</td>
<td>3</td>
</tr>
<tr>
<td>Rectus capitus L</td>
<td>3</td>
</tr>
<tr>
<td>Upper trap R</td>
<td>3</td>
</tr>
<tr>
<td>Upper trap L</td>
<td>3</td>
</tr>
<tr>
<td>Lateral capsule R</td>
<td>3</td>
</tr>
<tr>
<td>Lateral capsule L</td>
<td>3</td>
</tr>
<tr>
<td>Dorsal capsule R</td>
<td>3</td>
</tr>
<tr>
<td>Dorsal capsule L</td>
<td>3</td>
</tr>
<tr>
<td>Superficial masseter R</td>
<td>3</td>
</tr>
<tr>
<td>Superficial masseter L</td>
<td>3</td>
</tr>
<tr>
<td>Temporalis Tendon R</td>
<td>3</td>
</tr>
<tr>
<td>Temporalis Tendon L</td>
<td>3</td>
</tr>
</tbody>
</table>
Case: Exam Findings

Range of Motion:
- Comfort Opening: 23 + 5 mm
- Passive Opening: 30mm (w/ pain on L TMJ )
- Opening Path: straight
- RT lateral: 8mm (w/ pain on L TMJ )
- LFT laterotrusive: 10mm (w/ pain on L TMJ )

TMJ Noise Dysfunction: Crepitus on the left
Generalized osteoarthritis

- **Primary vs. Secondary**
  - **Primary**: idiopathic, genetic
  - **Secondary**: osteoarthritic changes caused by other disorders

- **Heberden’s nodes**
Causation

- Mechanical stress
- Idiopathic
- Inflammation
- Genetic
- Reduced proteoglycan content
Imaging Modalities

Click to enlarge in new window.
### Osseous Component (CT/CBCT): What do we look for?

#### Condylar features

<table>
<thead>
<tr>
<th>Articular surface flattening</th>
<th>Subcortical sclerosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subcortical cyst</td>
<td>Surface Erosion</td>
</tr>
<tr>
<td>Osteophyte</td>
<td>Loose joint body</td>
</tr>
<tr>
<td>Deviation in form</td>
<td>Bony ankylosis</td>
</tr>
<tr>
<td>Condylar hypoplasia</td>
<td>Condylar hyperplasia</td>
</tr>
</tbody>
</table>

#### Condylar position

| Concentric position with normal joint space |
| Concentric position with decreased joint space |
| Anterior position |
| Posterior position |

#### Fossa/eminence features

| Articular surface flattening | Subcortical sclerosis |
| Surface erosion |

<table>
<thead>
<tr>
<th>No Osteoarthritis</th>
<th>Indeterminate for Osteoarthritis</th>
<th>Osteoarthritis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal size of condylar head PLUS</td>
<td>Normal size of condylar head PLUS</td>
<td>Deformation from subcortical cyst, surface erosion, osteophyte, or generalized sclerosis</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No subcortical sclerosis or articular surface flattening PLUS</td>
<td>Subcortical sclerosis with or without articular surface flattening OR</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No deformation from subcortical cyst, surface erosion, osteophyte, or generalized sclerosis</td>
<td>Articular surface flattening with or without subcortical sclerosis PLUS</td>
<td></td>
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<tr>
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<td></td>
<td></td>
<td>No deformation from subcortical cyst, surface erosion, osteophyte, or generalized sclerosis</td>
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</tbody>
</table>
Case: Imaging Findings
49 yo female with left-sided pain

HPI:
- 14-year history of left-sided TMJ pain
- Prior treatments: multiple steroid joint injections, TMJ surgery
- Persistent pain
- Was told she had “arthritis” in the TMJ
- Hurts to even brush her hair on that side
Physical exam

- Range of motion:
  - Comfort: 22 mm
  - Passive: 39 mm, pain on left TMJ, soft-end feel
  - Lateral movements: R: 7 mm, L: 9 mm
  - Straight opening path

- Intraoral exam:
  - Generalized moderate dental attrition

- Occlusal exam:
  - Heavier contacts on the left posterior teeth

- Joint noises:
  - Crepitus, L TMJ
  - Allodynia L TMJ area

- All palpations were severe
Trigeminal Nerve Exam

Intraoral
- Light touch: LV2 and V3: reduced sensation
- Pin Prick: LV2 and V3: reduced sensation

Extraoral
- Light touch: LV1 reduced sensation
- LV2: allodynia
- Pin prick: LV1: reduced sensation
- LV2: Hyperalgesia
Radiographic Exam

Bilateral, severe erosive degenerative changes of the condyles
Diagnoses

- Arthralgia
- Degenerative joint disease
- Myofascial Pain
- Possible neuropathic component

Any underlying etiology?
Polyjoint arthritis

- Manifests as swelling and disability in multiple body joints

- Various types: rheumatoid, osteoarthritis, psoriatic, lupus, gout, and pseudogout

- May have clear hematologic markers

- Polyjoint osteoarthritis is the most common of the rheumatic diseases
Rheumatoid arthritis (RA)

- Chronic, systemic, autoimmune and inflammatory disorder
- Joint inflammation, erosive properties, symmetric joint involvement
- Can affect other organ systems

- Serologic markers:
  - Rheumatoid factor
  - Erythrocyte sedimentation rate
  - Anti-CCP antibodies

- Genetic component
Rheumatoid arthritis and the TMJs

- The TMJ is one of the last joints affected by RA (generally)

- Affected in >50% of adults and children with RA

- Symptoms:
  - Dull, aching pain with function
  - Joint edema
  - Limited mandibular range of motion
  - Anterior open bite
  - Stiffness
"Wow! Those 2 Aleve really helped my arthritis pain!"

Said no one with RA ever.
Synovial Chondromatosis

- Affects synovium
- 3 stages: a) early, b) transitional, c) late
- Usually affects one joint
- Tx: remove loose bodies, partial or complete synovectomy
53 yo female presents with left-sided ear and TMJ pain

**Pain History:**

- **Onset:** 2+ years ago
- **Location:** left ear and TMJ area
- **Quality:** sharp, stabbing, accompanied by “ear stuffiness”
- **Frequency:** a few times per week, 10-20 episodes per day
- **Attack duration:** a few seconds
- **Severity of Pain:** 7-8/10
- **Ameliorating factors:** ibuprofen
- **Factors that made pain worse:** laying down
- **Associated symptoms:** “crunchy sounds” in the left TMJ area
**Surgical procedure:** Left TMJ arthroplasty with removal of benign tumor by the oral and maxillofacial surgeon. Post-operative healing was excellent. Photo taken 3 months post-op.
70 yo female with pain on the left

<table>
<thead>
<tr>
<th>Onset</th>
<th>4-5 years ago</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>Left joint</td>
</tr>
<tr>
<td>Quality</td>
<td>Throbbing</td>
</tr>
<tr>
<td>Frequency</td>
<td>Daily</td>
</tr>
<tr>
<td>Attack duration</td>
<td>Almost all day</td>
</tr>
<tr>
<td>Severity</td>
<td>5/10</td>
</tr>
<tr>
<td>Ameliorating factors</td>
<td>Prior splint</td>
</tr>
<tr>
<td>Exacerbating factors</td>
<td>Yawning</td>
</tr>
<tr>
<td>Associated symptoms</td>
<td>Headaches, neck pain, ear pain, jaw popping</td>
</tr>
</tbody>
</table>

Tender on all palpations
Passive opening: 25 mm
Crepitus on the left
Left teeth have not come together in years
imaging
Chronic pain associated with TMJ dysfunction and joint arthrosis

Peripheral and central sensitization of afferent nerves

Increased sensitivity to tactile and pin-prick stimuli

Lower pressure thresholds on the TMJ
Idiopathic condylar resorption

- Localized condition affecting the jaw joints
- Commonly found in teenage girls
- Etiology is poorly understood
- Need to rule out local and systemic etiologies

- Causes mandibular condylar resorption
  - loss of vertical dimension of the condyle
  - anterior open bite/occlusal dysfunction
  - TMJ pain and dysfunction
Idiopathic condylar resorption

Right

Left
13.5 MM ON RT   9.3 MM ON LEFT
15 yo girl referred by ortho for occlusal change

- 1 year ago, developed a bite change
- Ortho was completed at age 12

<table>
<thead>
<tr>
<th>Onset</th>
<th>3 years ago</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>Right side</td>
</tr>
<tr>
<td>Quality</td>
<td>Achy</td>
</tr>
<tr>
<td>Frequency</td>
<td>Varies from weekly to daily</td>
</tr>
<tr>
<td>Attack duration</td>
<td>Hours</td>
</tr>
<tr>
<td>Severity</td>
<td>2-3/10</td>
</tr>
<tr>
<td>Ameliorating factors</td>
<td>Not moving her jaw</td>
</tr>
<tr>
<td>Exacerbating factors</td>
<td>Chewing, yawning, talking</td>
</tr>
<tr>
<td>Associated symptoms</td>
<td>Headaches, neck pain, bite change, jaw popping, locking</td>
</tr>
</tbody>
</table>
Exam

Tenderness to palpation: severe on dorsal aspect of condyles

Range of Motion:
Comfort Opening: 62 + 3 mm
Passive Opening: 63mm  no pain
RTL Laterotrusive: No Pain 12mm
LFTL Laterotrusive: No Pain 12mm
Midline: WNL mm
Opening Path: straight

TMJ Noise Dysfunction: right side early opening
Imaging
Treatment

- NO RCTs identifying treatments for ICR
- Multifactorial treatments (depends on symptom severity)
  - Orthotics
  - Arthrocentesis, Arthroscopy
  - Condylar replacement: costochondral graft
  - Orthognathic surgery
Questions?