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A Complete Clinician's Approach to Musculoskeletal Management of Foot and Ankle Pain

CASE STUDY

HISTORY

WHO:

64-year-old female retired high school teacher. Daily activities include housework and volunteering at the local senior center. She generally enjoys traveling both within the United States and internationally. She notes that she has been able to ride her stationary bicycle with minimal discomfort, and it actually seems to help her symptoms.

PMH: She takes Synthroid for a mild hypo-thyroid condition.

All lab testing, and dexa-scan have been normal in her last physical exams.

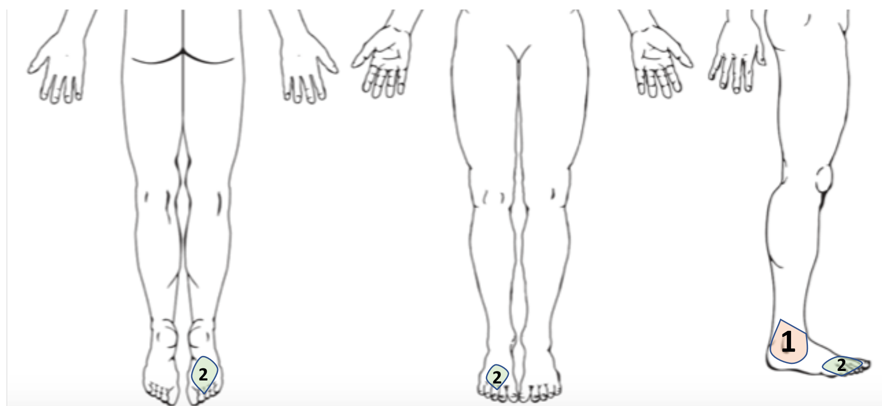
WHAT:

Dull aching at the right ankle (1), with warmth and swelling; burning pain at the distal foot (2).

WHERE:

Patient places her hand at the anterolateral aspect of the right ankle to indicate her aching pain, where it also feels swollen and warm.
Pain in her foot is located at the dorsum and plantar aspect of the distal foot between the 2nd and 3rd metatarsal and refers proximally along the sole of the foot.

Pain diagram:



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WHEN:

Aggravating Factors:

- The ankle is stiff and sore in the morning.
- Prolonged standing / weight bearing increases both the ankle and the foot pain.
- Prolonged walking increases both the ankle and the foot pain.
- Burning pain at night.

Alleviating Factors:

- Rest and elevation, but only if she keeps the foot moving. otherwise it stiffens and becomes painful.
- OTC Ibuprofen.

WHY:

The patient reports recent exacerbation 6 weeks ago to be very similar to an episode of ankle/foot pain 3 years ago that she experienced after extensive walking on cobblestone streets in flat shoes while in Europe. She recalls no injury specifically but notes that at the end of a 3rd day of sightseeing in the city, her right ankle was very stiff and swollen and she had burning in her foot. Upon return to the US, she was placed in a walking boot, and symptoms gradually resolved.

More recently, symptoms came on gradually during a 6-day hiking trip where she was carrying a 30-pound pack. Walking surface at times included rocky hard surfaces. Upon questioning she notes that her hiking boots might be a bit old, last replaced about 5 years ago, and as pain gradually came on during the trip, she noticed that she seems to land hard and the boots were likely not as supportive as they should have been. Symptoms started on the 3rd day and got progressively worse to the point where she was limping on the last day.

Past medical history:

a. In college one winter, she slipped on the ice and sprained the right ankle. She recalls that while moderately painful, bruised and swollen, it was during exams at the end of the semester. She was able to 'walk it off', keep the ankle elevated while studying and limped around for the first 2 weeks, rested during the break, and then returned to school and didn't think of it further. She also recalled that in the last 2 to 3 years of teaching (she retired at 62), her right foot would burn at the end of the day, depending on what shoes she was wearing.
b. Multiple abdominal surgeries including hernia repair x3, appendectomy, gallbladder removal.
c. Occasional R knee pain secondary to osteoarthritis, diagnosed by primary care provider.

TO WHAT EXTENT:

Over the past 6 weeks, pain has stayed the same. The ankle pain is 1/10 at rest but becomes a 3/10 when not moving for a period of time; it tends to wake her at night and she cannot sit for an entire movie without having to get up and walk off the stiffness. The burning pain in the foot

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is a 2/10 at rest, and with standing and walking, it can increase to an 8/10 depending on the length of time she is weight bearing. Burning pain can keep her awake at night.

CLINICAL EXAMINATION

Inspection/Palpation:

Moderate swelling diffusely around TCJ with increased warmth; Pronounced hallux valgus on the right, with mild on the left.

Lower arch on the right side, mild genu valgus on the right compared to the left.

Basic Clinical Exam:

Standing test	Limitation		Pain Level	Location
Bilateral loaded dorsiflexion	L	R 10 deg limit	6/10	anterolateral ankle
	Repetitions			
Heel raises		strong and painless		

Passive motions	Motion		Pain Level	Location
Talocrural Dorsiflexion: Knee Extended	L	R		
Talocrural Dorsiflexion: Knee Slightly Flexed	L	R 10° lim hard end feel	Moderate (5-6.10)	Anterior/Lateral ankle
Talocrural Plantar Flexion	L	R 20° lim hard end feel	Moderate (5-6.10)	Anterior/Lateral ankle
Subtalar Joint Inversion: Provocation		10-degree loss	not painful	
Subtalar Joint Eversion: Provocation		5-degree loss	not painful	

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Joint Specific Testing	Mobility		
	Hypo - Normal - Hyper		
Subtalar Joint: Prone Mobility	L	R	
Midtarsal Dorsiflexion	L	R 50% lim	not painful
Midtarsal Plantar Flexion	L	R 50% lim	not painful
Midtarsal Abduction	L	R 50% lim	not painful
Midtarsal Adduction	L	R 50% lim	not painful
Midtarsal Supination	L	R 50% lim	not painful
Midtarsal Pronation	L	R 50% lim	not painful

Lateral ligament tests			Pain level	Location
Max Plantar Flexion, Adduction, Supination	L	R	not painful	
10˚ Plantar Flexion, Adduction, Supination	L	R	not painful	
Dorsiflexion, Adduction, Supination	L	R	not painful	

Medial ligament tests			Pain level	Location
Max Plantar Flexion, Abduction, Pronation	L	R	not painful	
10˚ Plantar Flexion, Abduction, Pronation	L	R	not painful	
Dorsiflexion, Abduction, Pronation	L	R	not painful	

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Resisted testing (R)/ Stretch ↔			Pain level	Location
R Extensor Digitorum DF, Abd, Pro	L	R	strong and painless	
↔Extensor Digitorum PF,Add,Sup	L	R	Mild pain, 2/10, at the anterolateral ankle	
R Anterior Tibialis DF,Add,Sup	L	R	strong and painless	
↔Anterior Tibialis PF,Abd,Pro	L	R	Mild pain, 2/10, at the anterolateral ankle	
R Peroneals DF,Abd,Pro	L	R		
↔Peroneals PF,Add,Sup	L	R	Mild pain, 2/10, at the anterolateral ankle	
R Posterior Tibialis DF,Add,Sup	L	R	Mild weakness, no pain	
↔Posterior Tibialis PF,Abd,Pro	L	R	Mild pain, 2/10, at the anterolateral ankle	

ATTCS Test	L	R	Pain Level	Location
Unipedal dorsiflexion	L	R		

Stability Test	L	R	Instability	Comment
Anterior Drawer in 10˚ PF (ATFL)	L	R		
Anterior Drawer in DF (CFL)	L	R		

Syndesmosis Tests	L	R	Pain Level	Location
Squeeze Test: Sitting Acute	L	R		
Lateral Gapping, ER Test Subacute	L	R		
Squeeze Test: Standing Recurrent	L	R		
Distal Fibula A-P Glide	L	R		

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Special Test: Metatarsal head squeeze test (+)
Joint mobility testing: Limited STJ in a noncapsular pattern, TCJ hypomobility (limited anterior - posterior translation), TNJ hypomobility, CNJ hypomobility

DIAGNOSIS

1) R ankle activated arthrosis with ROM limitation in a capsular pattern
2) R foot Morton's Neuroma between 2nd and 3rd MT heads

Causal factors and perpetuators

1. Overweight.
2. knee osteoarthritis with mild valgus, increasing foot hyper-pronation
3. subtalar joint stiffness, leading to hard landing and 'locking deficit' during push off; the former leads to TCJ loads and the latter leads to increased forefoot pronation/neuropathy
4. midtarsal joint stiffness; may be due to eversion limit at the subtalar joint. have to treat the subtalar joint first then reassess
5. is the activated arthrosis due to earlier trauma? right LE 'collapse'?

MANAGEMENT (consider)

Education and reassurance
Manual Lymphatic Drainage
Neural flossing
Unloading and cyclic type activities
Improve ankle mobility with joint specific mobilization.

- Talocrural
- subtalar
- Midtarsal joint mobilizations

Intra-articular talocural joint injection and/or an injection at the neuroma site, depending on progress