

Differential diagnosis of joint pain

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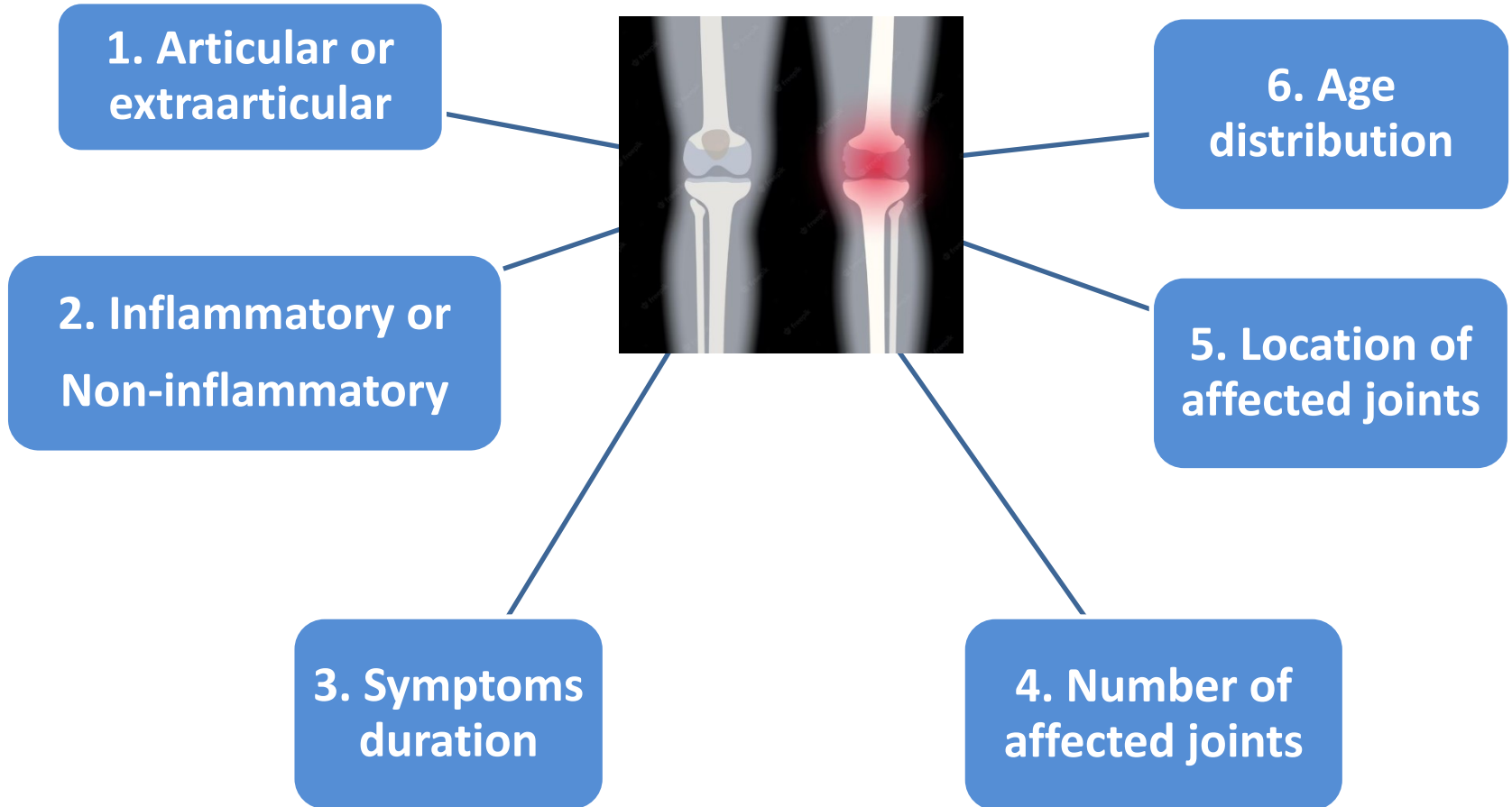
Today's agenda

- Theoretical basics
- Clinical cases

Pain in the joint area

- is a common finding with a wide differential diagnosis
- It can be an initial symptom of a number of joint diseases or soft tissue rheumatic pain syndromes

Approach to the patient



1. Articular or Extra-articular pain

Articular pain:

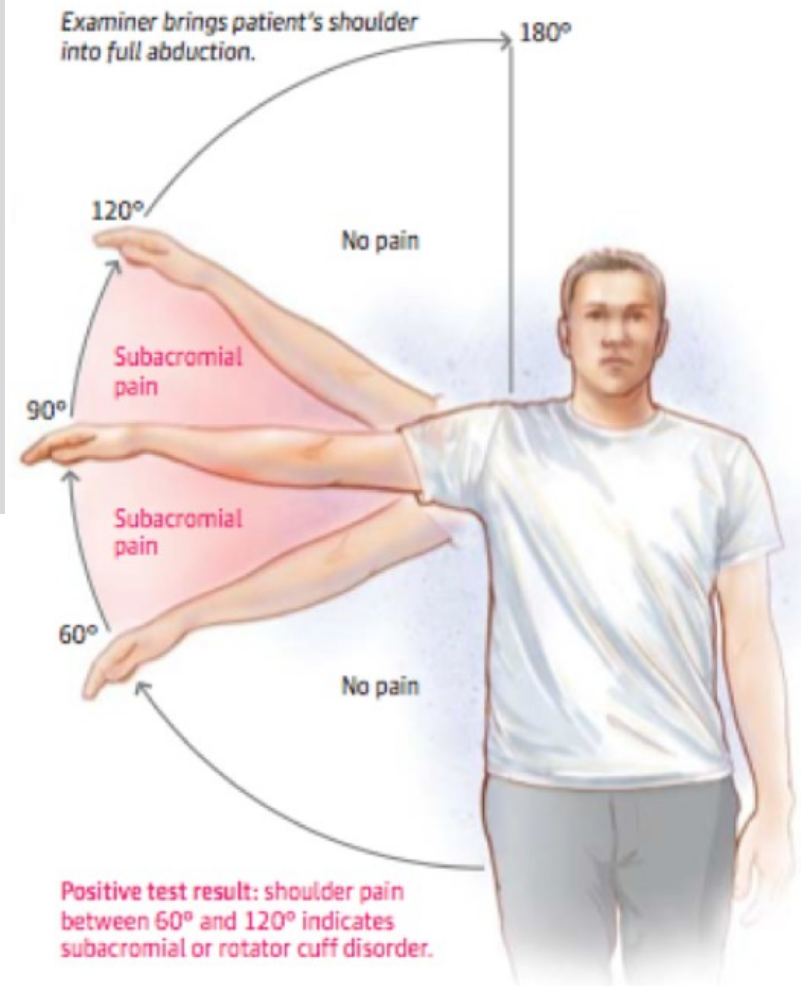
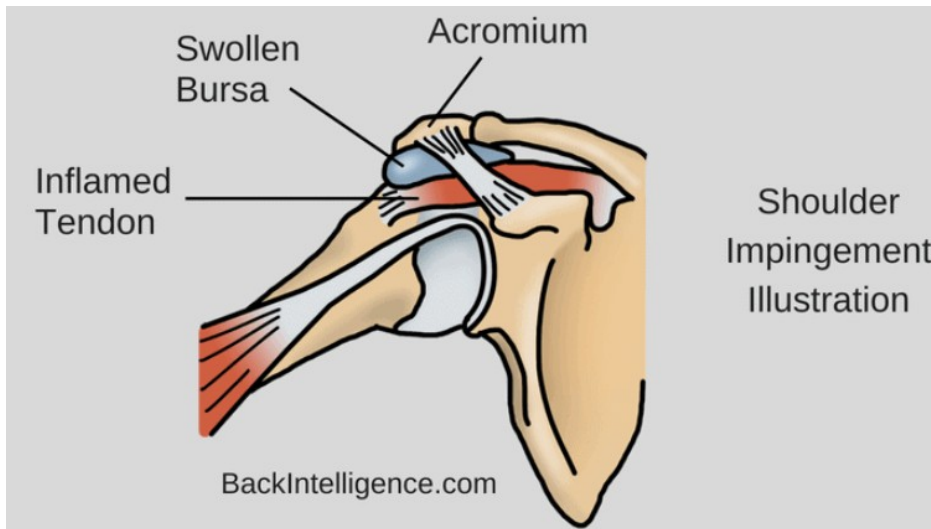
- deep, diffuse pain
- worsens with active and passive movement
- joint swelling and palpable pain along joint space
- Increased skin temperature
- Skin colour changes are not usually present
- (if present: septic arthritis, crystalline arthritis - gout)

1. Articular or Extra-articular pain

Extra-articular pain:

- sharp, localized pain
- worsens with active movement (not with passive)
- the patient usually tells/ shows what kind of movement is causing him pain
- examples:
 - Shoulder impingement syndrome – tendinitis of supraspinatus tendon in subacromial space
 - Subacromial bursitis

Impingement syndrome/ subacromial bursitis



2. Inflammatory or non-inflammatory disease

Symptom	Inflammatory (e.g. rheumatoid arthritis)	Non-inflammatory (e.g. osteoarthritis)
Morning stiffness	significant, long-term > 60 min	localized, short-term <30 min
Maximum of symptoms	after rest (morning)	after exercise (evening)
General symptoms	present	absent
Local signs of inflammation	present	absent
Symmetry of symptoms	common	occasional

General symptoms: fatigue, fever, anorexia, weight loss

Local signs of inflammation: swelling, increase of skin temperature (skin color changes)

3. Duration of symptoms

- **Acute joint syndrome < 6 weeks**
 - sudden onset of symptoms
 - e.g.: injury, acute gout attack, septic arthritis
- **Chronic joint syndrome > 6 weeks**
 - gradual development of symptoms
 - e.g.: rheumatoid arthritis, peripheral spondyloarthritis, SLE

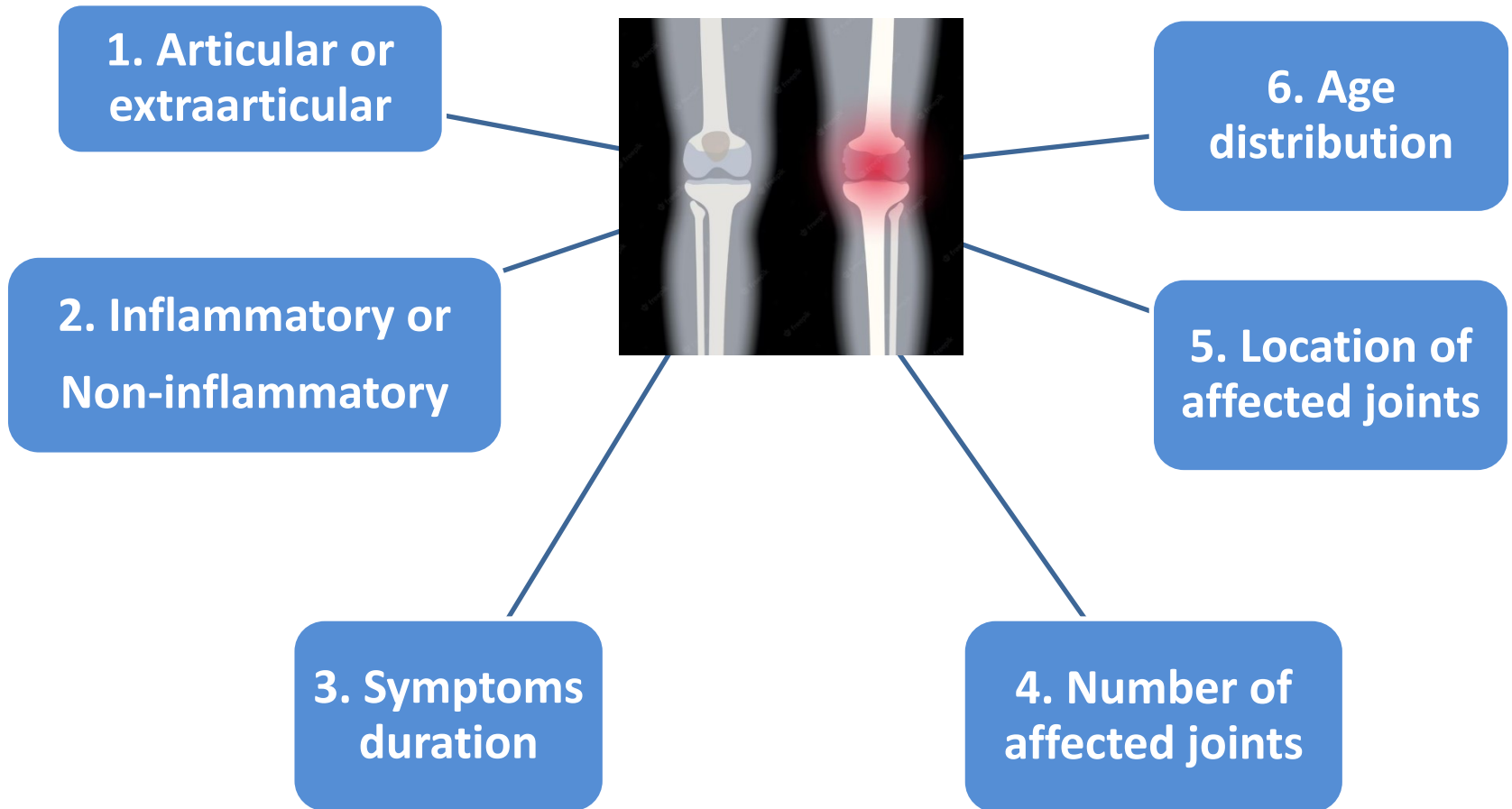
4. Number of affected joints

- **Monoarticular syndrome** - involvement of one joint
- **Oligoarticular syndrome** - involvement of 2-4 joints
- **Polyarticular syndrome** - involvement ≥ 5 joints

Note:

- **small joints:** MCP, PIP, DIP, IP joint of thumb, wrist, MTP.
- **Large joints:** shoulder, elbow, hip, knee, ankle

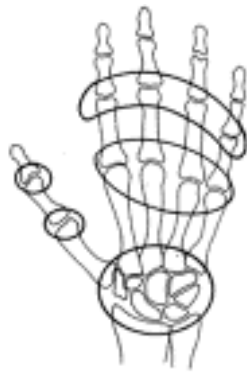
Approach to the patient



5. Location of affected joints



Primary Osteoarthritis



Rheumatoid Arthritis



Psoriatic Arthritis



CPDD Arthropathy



Gout

A



Gout



Rheumatoid Arthritis



Psoriatic Arthritis

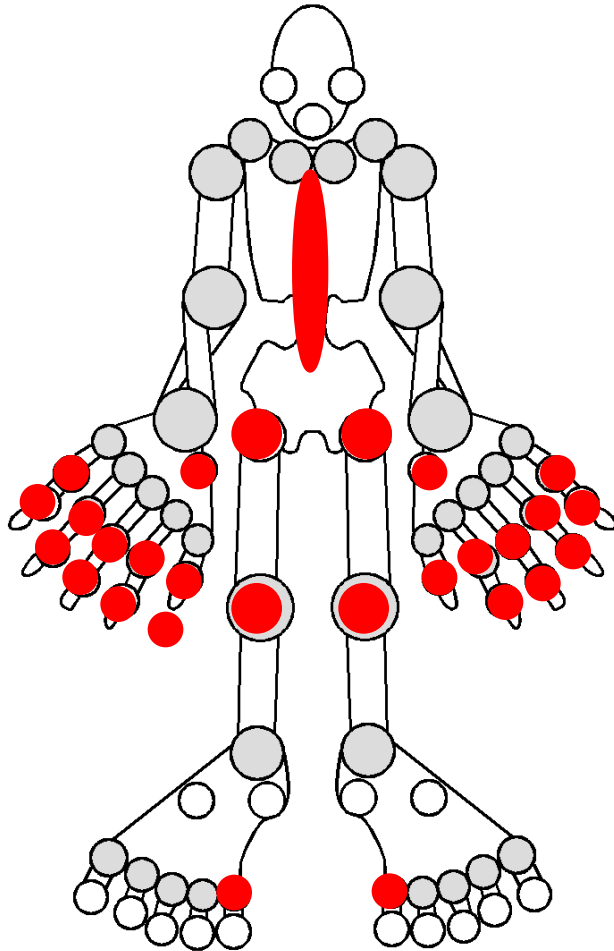


Diabetic Neuroarthropathy

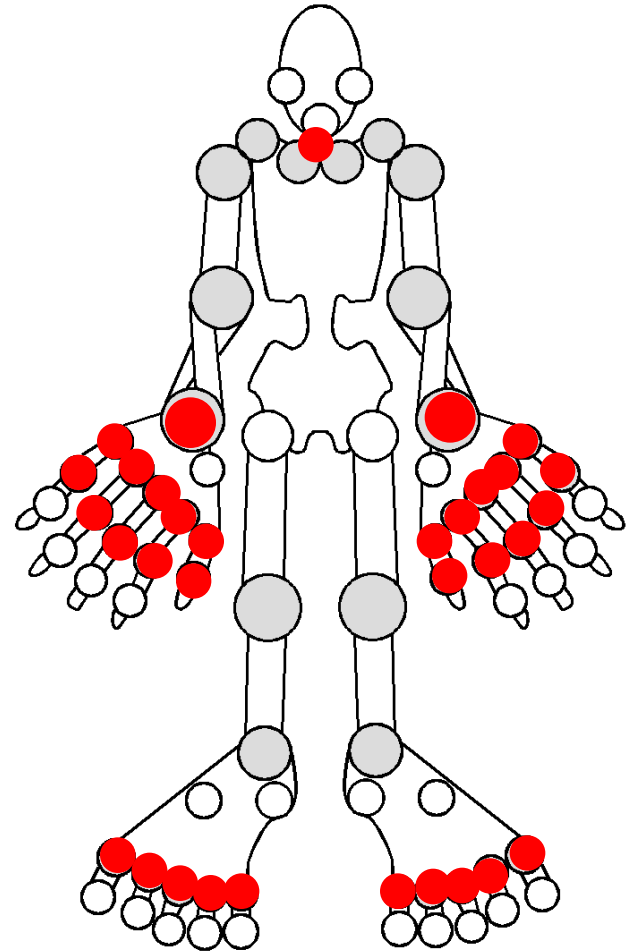
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5. Location of affected joints

osteoarthritis

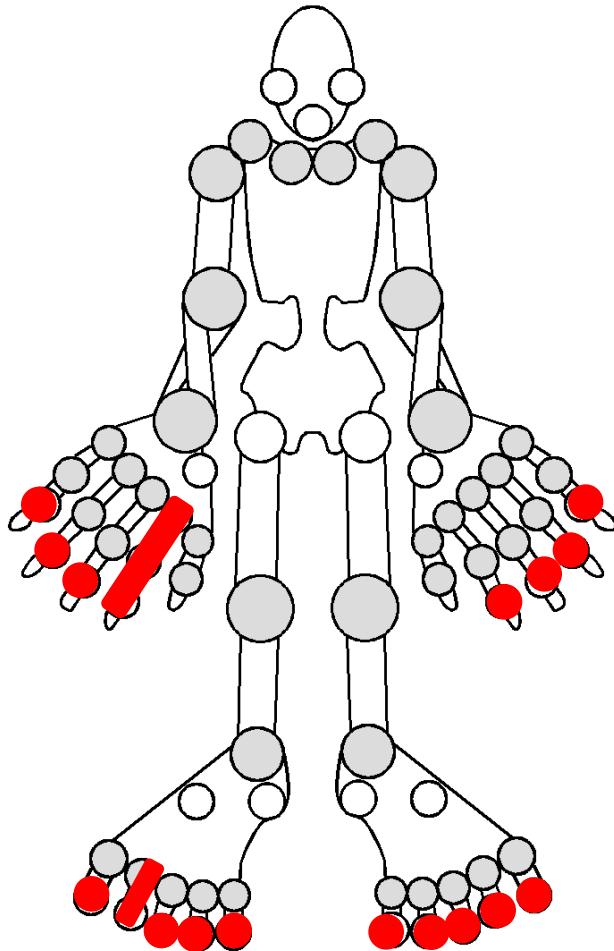


rheumatoid arthritis

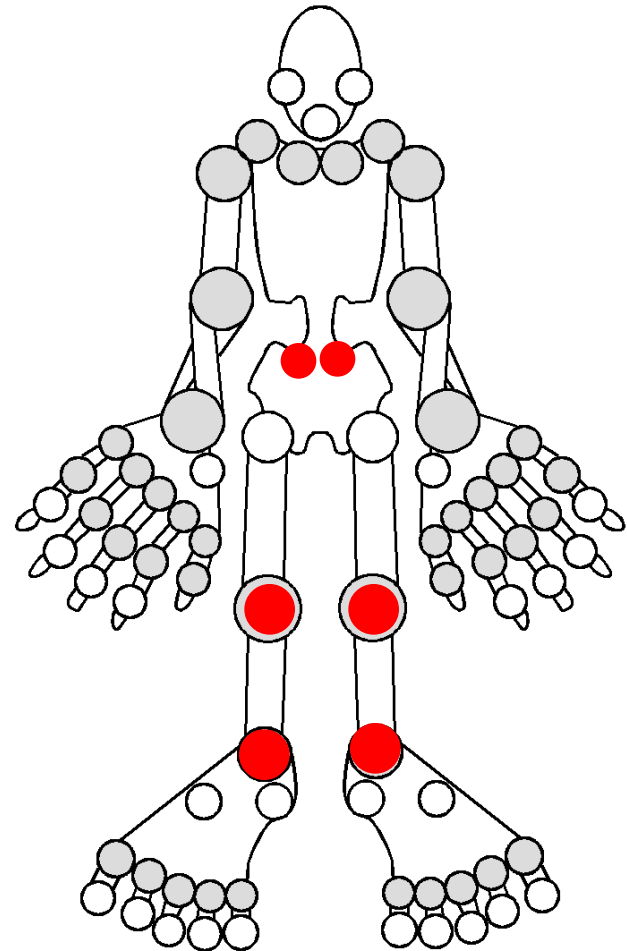


5. Location of affected joints

psoriatic arthritis

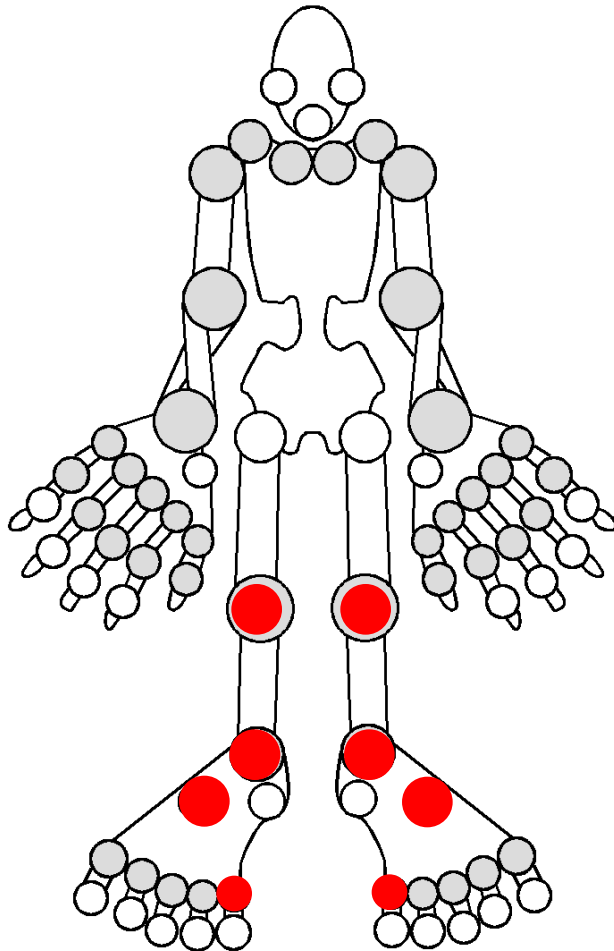


ankylosing spondylitis

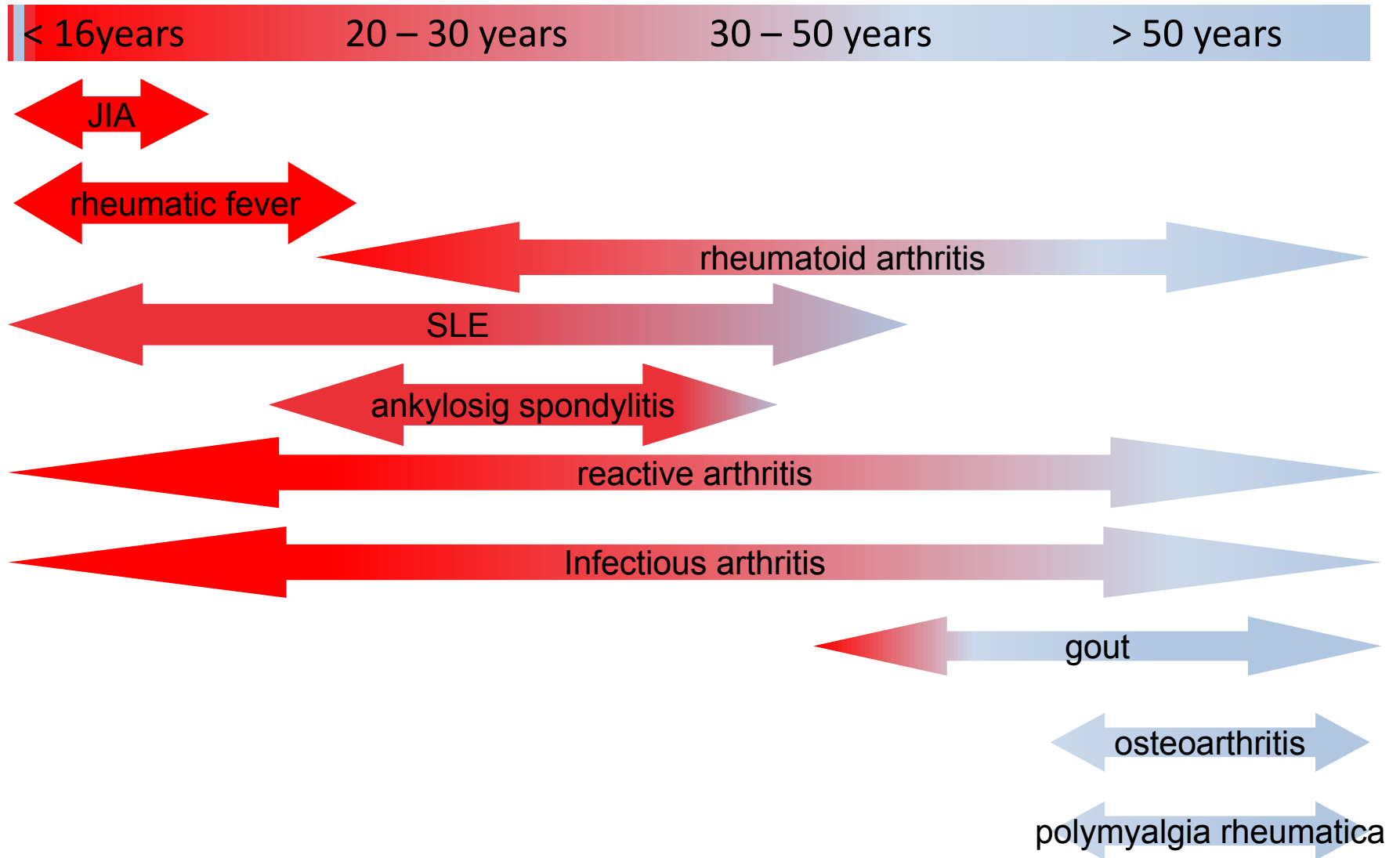


5. Location of affected joints

gout



6. Age distribution



Clinical case #1

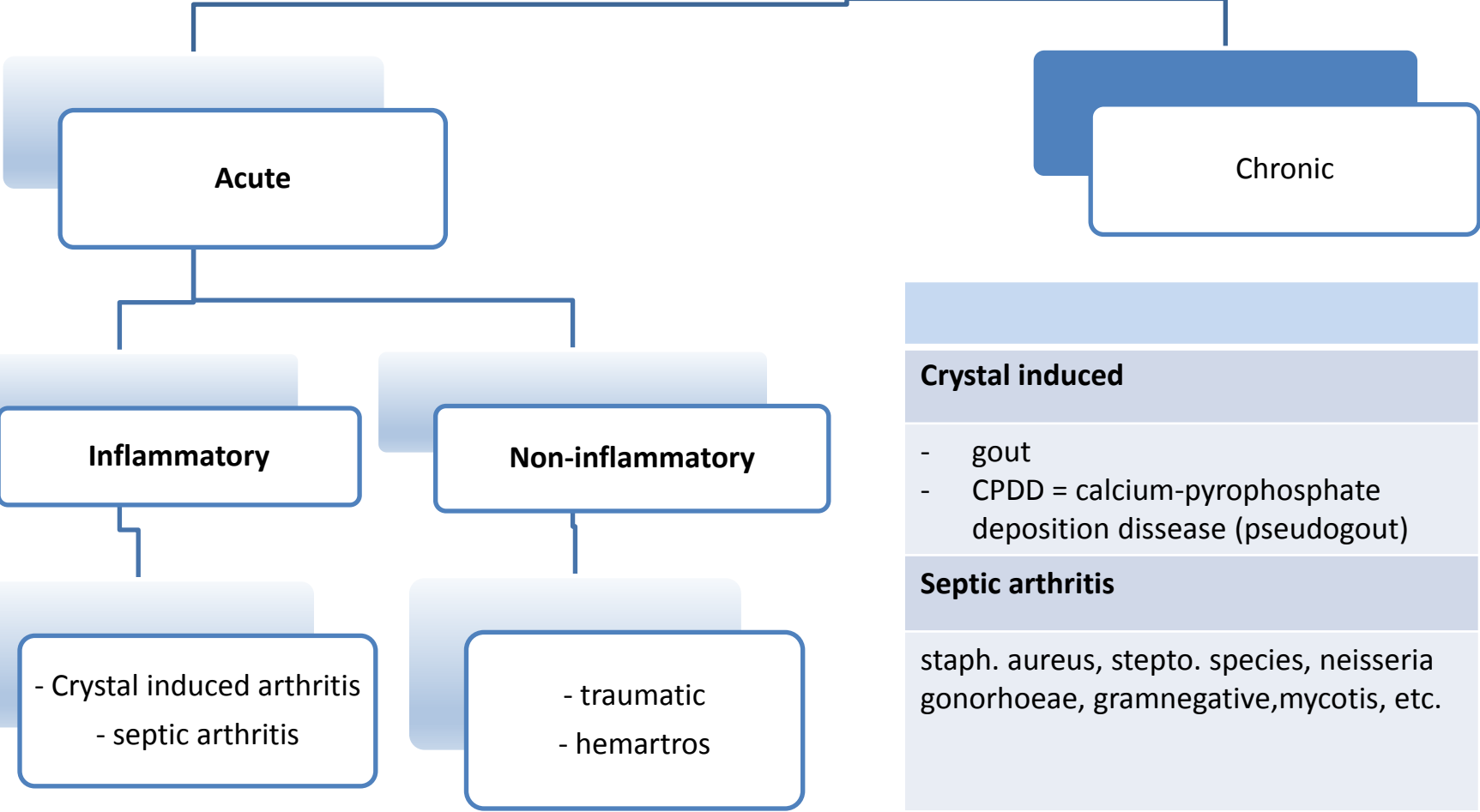
- 50 yo male
- Comorbidities: arterial hypertension , DM 2.type
- Complain: severe right knee pain of 12-hour duration
- No previous pain/surgery/injury

- 1yr ago: pain + swelling of the base of his great toe → resolved after 5 days with ibuprofen
- Clinical examination:
 - swelling with moderate effusion
 - erythematous warm skin, very tender on palpation

Clinical case #1

- **Approach:**
 - articular
 - inflammatory
 - symptom duration < 6 weeks = ACUTE ARTHRITIS
 - # of affected joints: 1 = MONOARTHRITIS
 - localization: large joint on distal extremity
 - Age: 50yo

Monoarthritis



- Crystal induced**
 - gout
 - CPDD = calcium-pyrophosphate deposition disease (pseudogout)
- Septic arthritis**
 - staph. aureus, stepto. species, neisseria gonorrhoeae, gramnegative, mycotis, etc.

Clinical case #1

- Next step?

Clinical case #1

- **Aspiration** of the knee joint to send fluid for:
 - synovial fluid analysis – inflammatory type of fluid
 - crystal analysis in polarized light microscopy
 - needle shaped strongly negatively birefringent crystals
 - Cultures - negative

Synovial Fluid Analysis

	Noninflammatory Type I	Inflammatory Type II	Septic Type III	Hemorrhagic Type IV
Appearance	Amber-yellow	Yellow	Purulent	Bloody
Clarity	Clear	Cloudy	Opaque	Opaque
Viscosity	High (+ String sign)	Decreased (- string)	Decreased (- string)	Variable
Cell Count (%PMN)	200-2000 (< 25% PMN)	2000-75,000 (>50% PMN)	> 60,000 (>80% PMN)	RBC >> wbc
Examples	OA Trauma Osteonecrosis SLE	RA, Reactive SLE gout Tbc, fungal	Bacterial Gout	Trauma, Fx Ligament tear Charcot Jt. PVS

Clinical case #1

- **Diagnosis:** acute crystalline arthritis – acute gout
- Note: serum uric acid in acute gout attack- may be elevated or normal

Clinical case #2

- 25 yo male
- Comorbidities: none
- Complains:
 - lower back pain that worsens at night
 - morning stiffness of lower back >45min
 - left ankle swelling for 3 months
 - history of uveitis
- Orthopedist
 - NSA treatment → reduced back pain and ankle pain, swelling did not resolve
 - 1 intraarticular glukokortikoid injection in the ankle

Clinical case #2

- **Approach:**
 - articular
 - inflammatory
 - symptom duration > 6 weeks = CHRONIC ARTHRITIS
 - # of affected joints: 1 = MONOARTHRITIS
 - localization: large joint on distal extremity
 - Age: 25yo
 - Other important symptoms: low back pain, history of uveitis

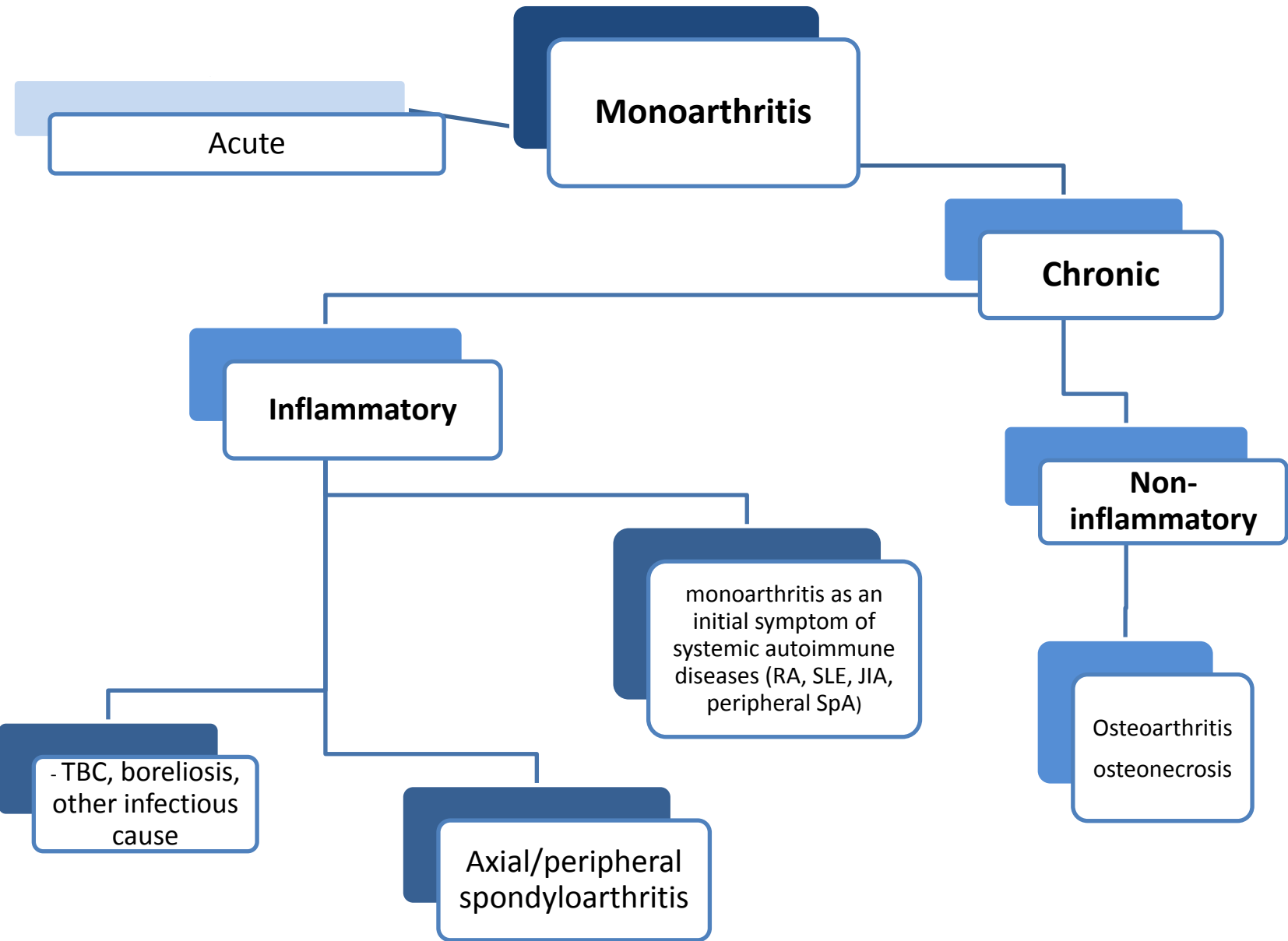
Clinical case #2

- Lab: CRP 7.0mg/l, ESR 35/60 mm/hour
- Immunology: RF, anti-CCP, anti-MCV negative
- HLAB27+

Clinical case #2 X-ray

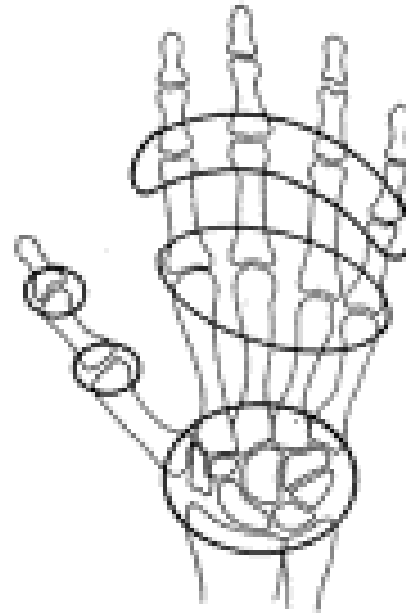


Diagnosis: axial spondyloarthritis



Clinical case #3

- **32-yo woman with 3-month history of:**
 - swelling of all MCP and PIP joint of the hand + both wrists
 - morning stiffness 1 hour
 - fatigue



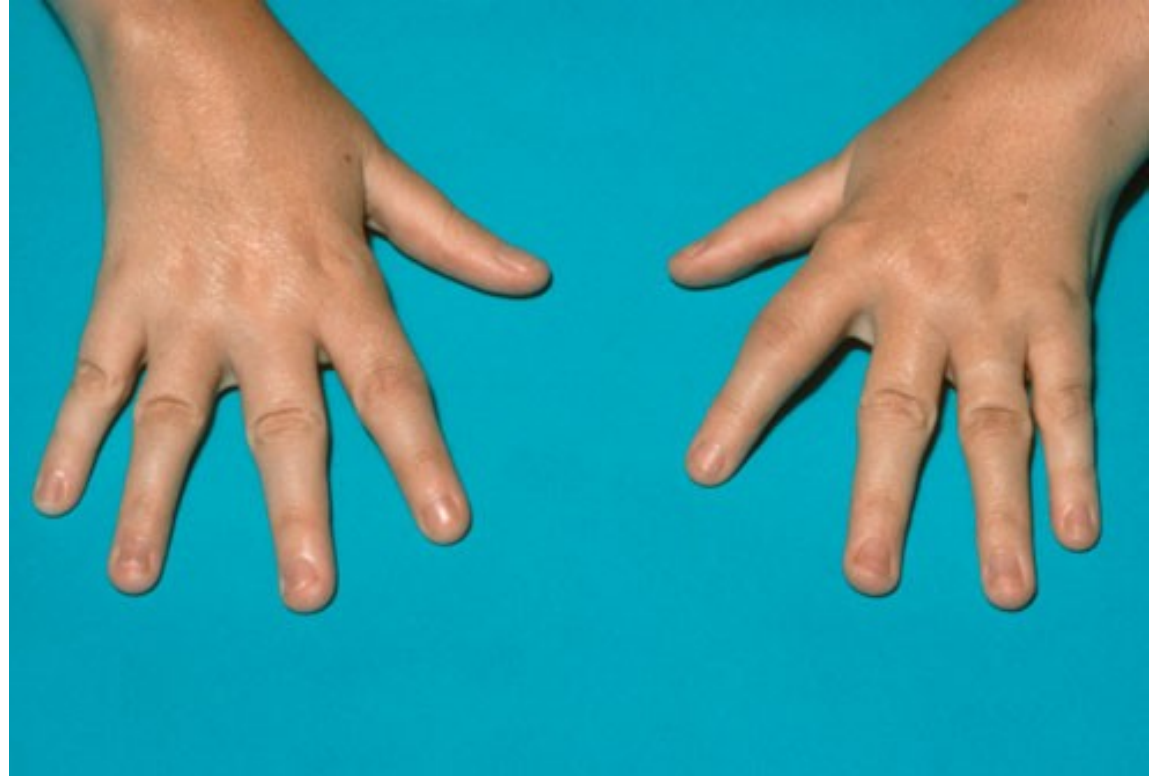
Clinical case #3

- **Approach:**
 - articular
 - inflammatory
 - symptom duration > 6 weeks = CHRONIC ARTHRITIS
 - # of affected joints: 18 = POLYARTHRITIS
 - localization: symmetrical polyarthritis
 - Age: 32yo

Clinical case #3

- Lab:
 - Elevated CRP and ESR
 - Positive auto-antibodies:
 - RF: rheumatoid factor
 - anti-CCP: cyclic citrulinated peptides
 - anti-MCV: mutated citrulinated vimentin
- X-ray hands+ feet
 - normal (no erosive changes)

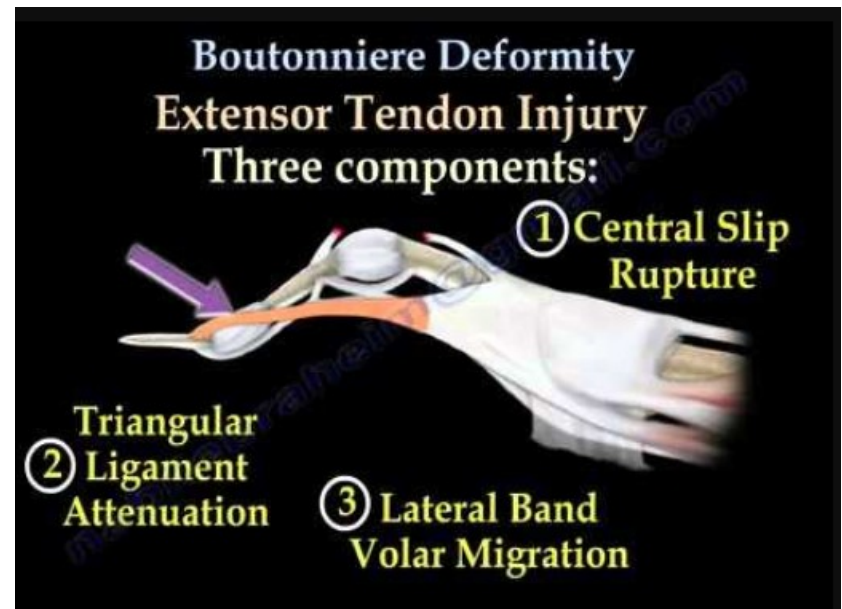
Clinical case #3



Diagnosis: early rheumatoid arthritis

- no deformities
- no erosion on X-ray

Established rheumatoid arthritis



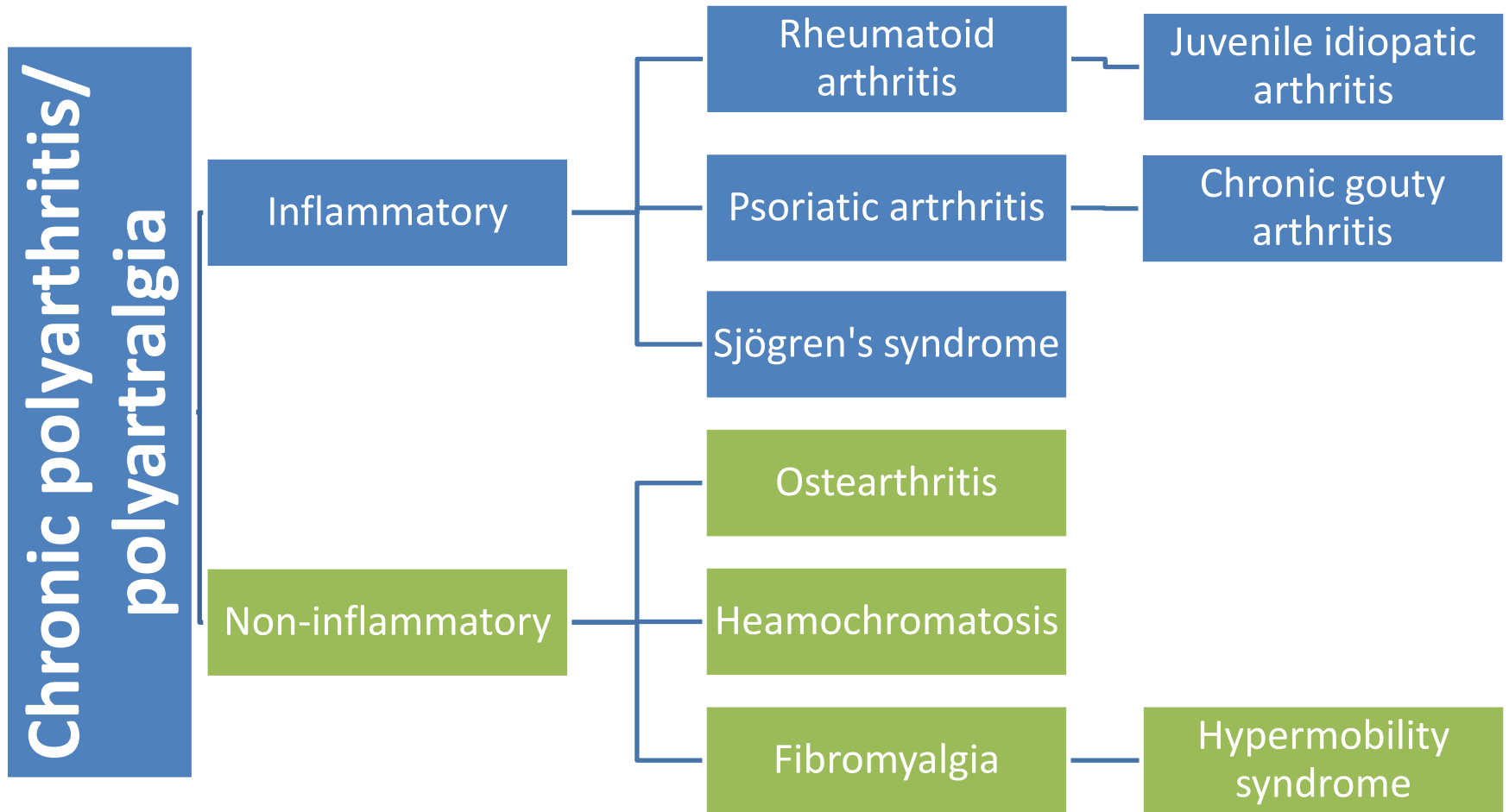
Established rheumatoid arthritis

X-ray findings:

- marginal erosions
- MCPs joint space narrowing
- severe erosions and destructions of the wrists



Differential diagnosis



Thank you for your attention

