

Reactive Arthritis

Postinfectious arthritis · enthesitis · systemic manifestations

Pathology lecture

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Learning objectives

- Recognize the infection-associated timing and characteristic peripheral joint distribution.
- Explain enthesitis, dactylitis, and axial involvement as linked musculoskeletal patterns.
- Identify genitourinary, ocular, mucocutaneous, and cardiac manifestations.
- Distinguish a postinfectious presentation from directly infected joints using Robbins-based contrasts.

Clinical pattern recognition—not a validated diagnostic criteria set.

Opening case: A painful swollen knee

A young adult develops abrupt swelling of one knee after an episode of gastrointestinal illness. Heel pain appears during the following weeks.

Which historical and examination features matter most?

Clinical reasoning

Does the infection–joint sequence suggest a postinfectious syndrome?

Discuss the temporal relationship, distribution, and extra-articular clues.

The classical clinical triad

- Arthritis is the defining musculoskeletal component.
- Nongonococcal urethritis or cervicitis is the genitourinary component.
- Conjunctivitis is the ocular component.
- The classical formulation links the triad to a preceding infection.

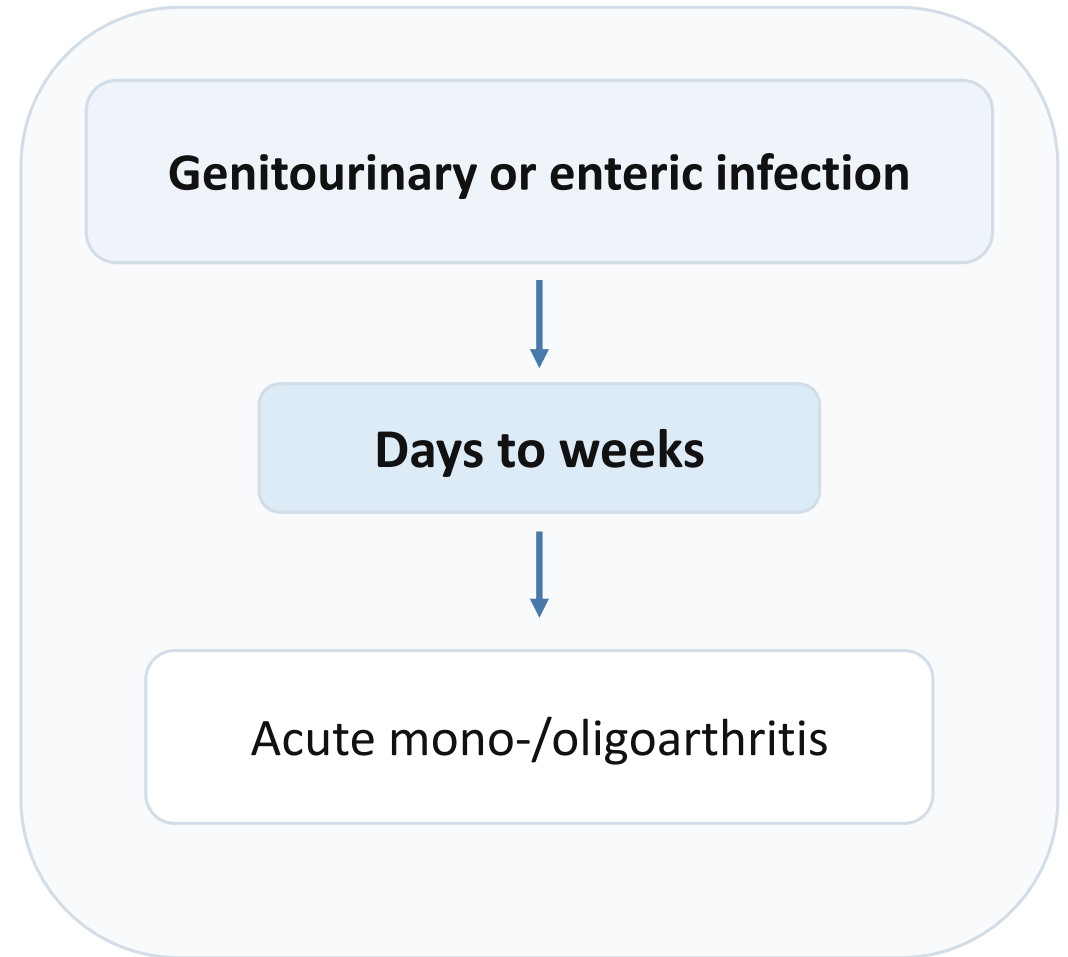
Arthritis

Urethritis / cervicitis

Conjunctivitis

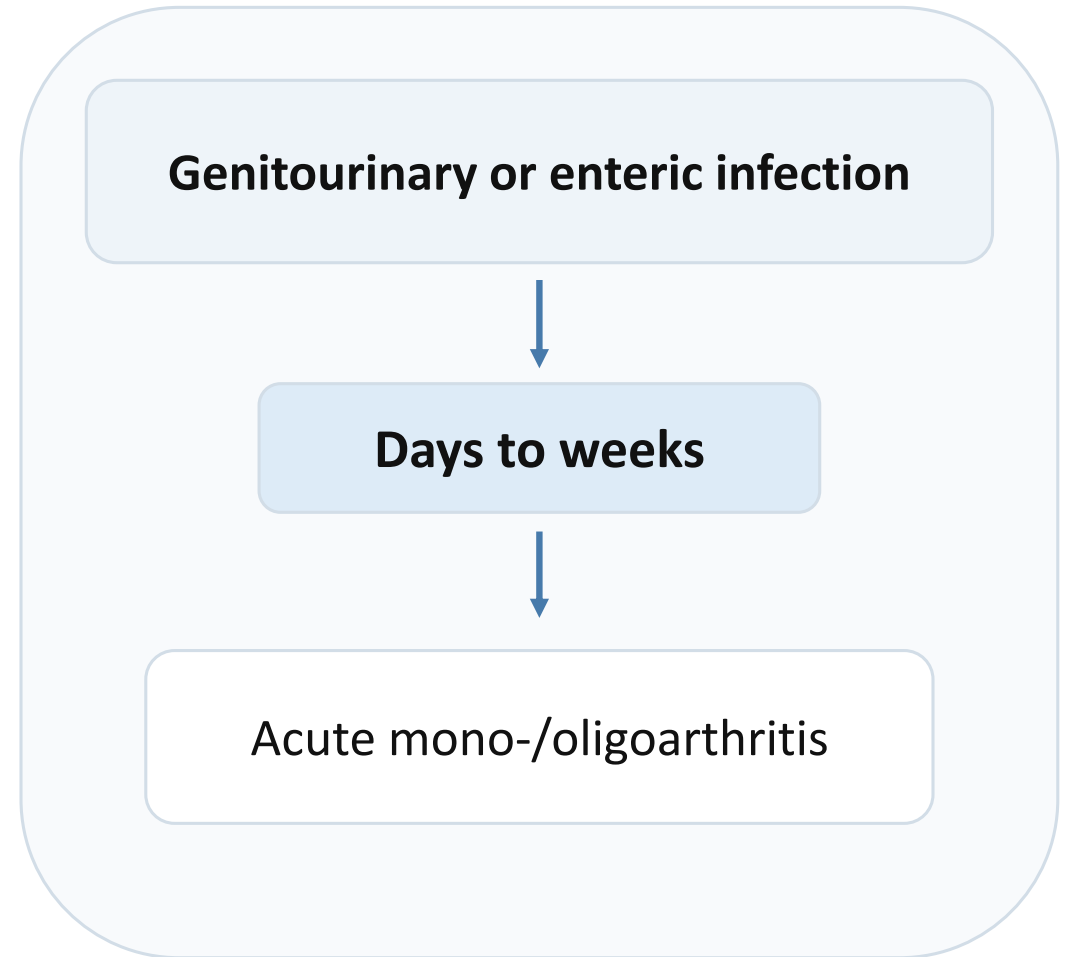
Reactive arthritis now has a broader definition

- The full classical triad is not required in the expanded textbook definition.
- Monoarthritis or oligoarthritis may appear days to weeks after a relevant infection.
- Genitourinary and gastrointestinal infections are recognized triggering contexts.



Temporal sequence is central

- The inciting infection occurs before onset of arthritis.
- Joint symptoms develop over a days-to-weeks interval.
- A focused history should connect a preceding infection with the new joint pattern.
- Temporal association is useful but cannot establish the mechanism by itself.



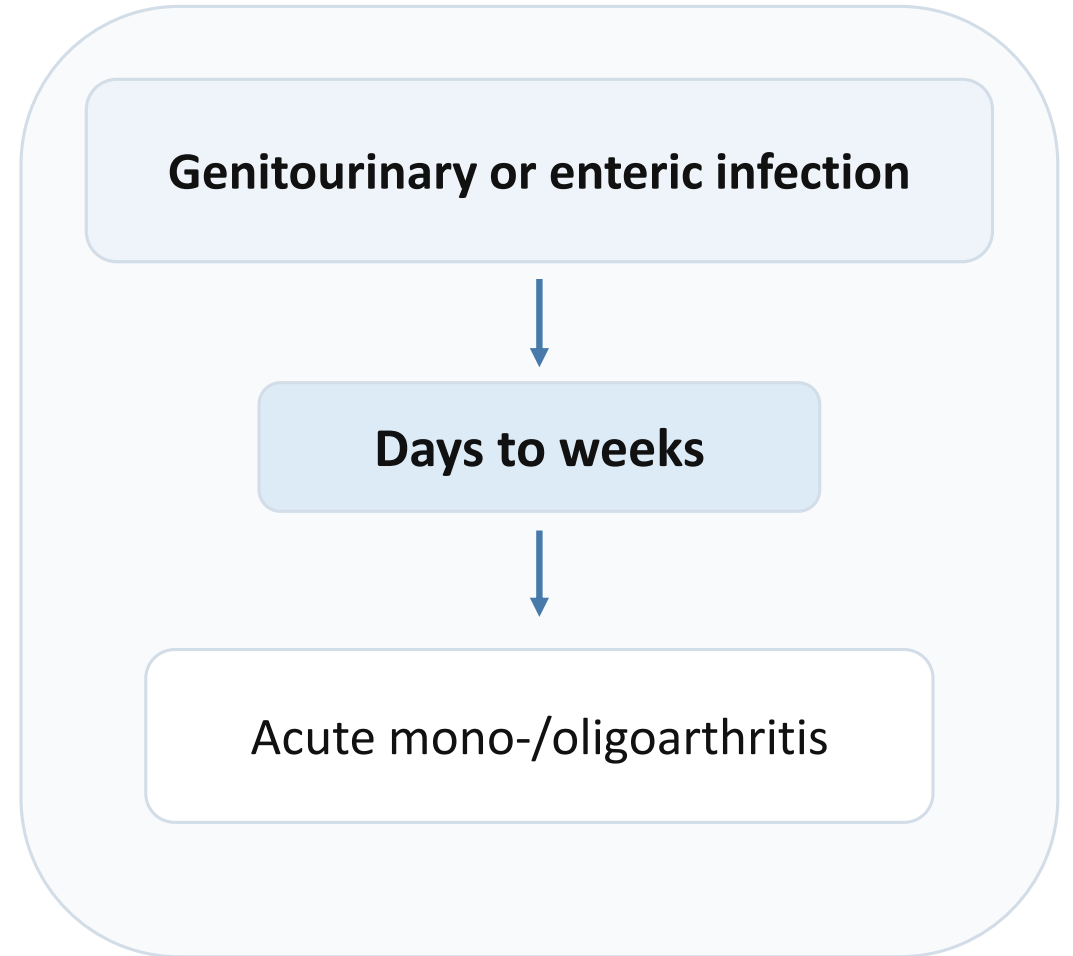
Classical triad versus clinical spectrum

Dimension	Classical description	Expanded spectrum
Joint disease	Arthritis	Mono- or oligoarthritis
Genitourinary	Urethritis / cervicitis	Can precede or accompany arthritis
Ocular disease	Conjunctivitis	Conjunctivitis or uveitis may occur
Trigger	Following infection	GU or gastrointestinal infection

The additional manifestations expand recognition beyond the three-part historical description.

Genitourinary trigger: Chlamydia

- Chlamydia is the explicitly named genitourinary pathogen.
- Arthritis may arise after the genitourinary episode rather than concurrently.
- Urethritis or cervicitis supplies a relevant clinical history.
- A history of an infection-associated sequence links organ systems.



Gastrointestinal triggers: Shigella and Salmonella

- Shigella and Salmonella are among the named enteric antecedents.
- The acute intestinal event may have preceded musculoskeletal symptoms by days or weeks.
- A recent gastrointestinal illness can guide clinical pattern recognition.

Genitourinary

Chlamydia

Gastrointestinal

Shigella

Salmonella

Yersinia

Campylobacter

C. Difficile

Gastrointestinal triggers: Yersinia and Campylobacter

- Yersinia and Campylobacter are additional recognized triggering organisms.
- Robbins separately notes Campylobacter-associated reactive arthritis in HLA-B27 carriers.
- The trigger list illustrates heterogeneous bacterial antecedents, not a unique organism.

Genitourinary

Chlamydia

Gastrointestinal

Shigella

Salmonella

Yersinia

Campylobacter

C. Difficile

Clostridioides difficile is also listed

- Clostridioides difficile is included among the textbook's gastrointestinal antecedents.
- The infection-associated joint syndrome is not restricted to the three classic enteric genera.
- The broad trigger list should not be mistaken for evidence of identical pathogen mechanisms.

Genitourinary

Chlamydia

Gastrointestinal

Shigella

Salmonella

Yersinia

Campylobacter

C. Difficile

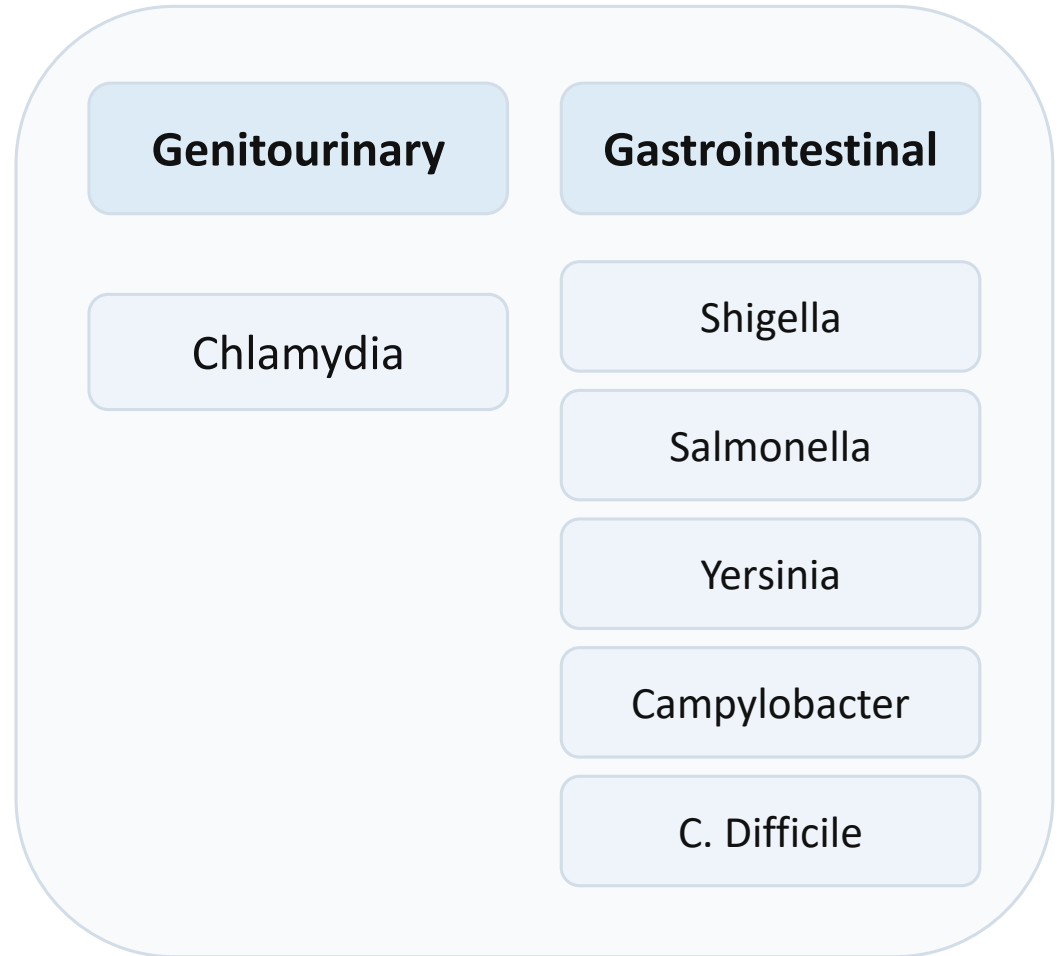
HIV-positive patients can be affected

- Reactive arthritis may develop in people living with HIV.
- The associated arthritis in this setting to pathogens other than HIV.
- Avoid claiming that HIV itself is the demonstrated arthritogenic trigger in this passage.

**HIV status is clinical context,
not proof of an HIV-specific
cause.**

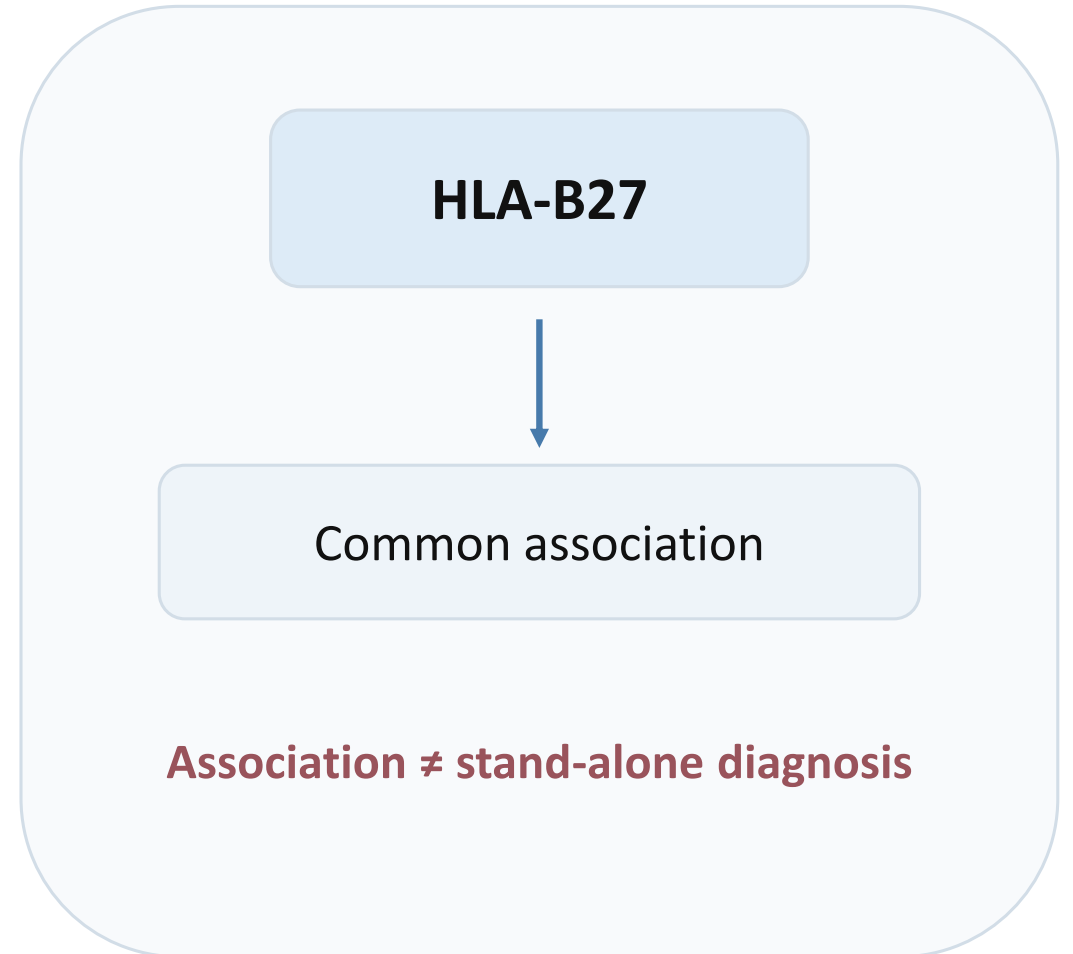
Organize the recognized antecedents

- Genitourinary: Chlamydia.
- Gastrointestinal: Shigella, Salmonella, Yersinia, Campylobacter, C. Difficile.
- These etiologic groups converge on an infection-associated inflammatory joint phenotype.



HLA-B27 is a common association

- HLA-B27 is frequently present in patients with reactive arthritis.
- It is also a shared feature within the seronegative spondyloarthropathy group.
- The source does not provide an HLA-B27 sensitivity or diagnostic cutoff for reactive arthritis.



Reactive arthritis in the spondyloarthropathy family

- Seronegative spondyloarthropathies typically lack rheumatoid factor.
- Entheses are important sites of pathology in the group.
- Axial involvement and HLA-B27 association are recurring group characteristics.
- Bony proliferation can lead to ankylosis within this disease family.

Spondyloarthropathy spectrum

Enthesitis

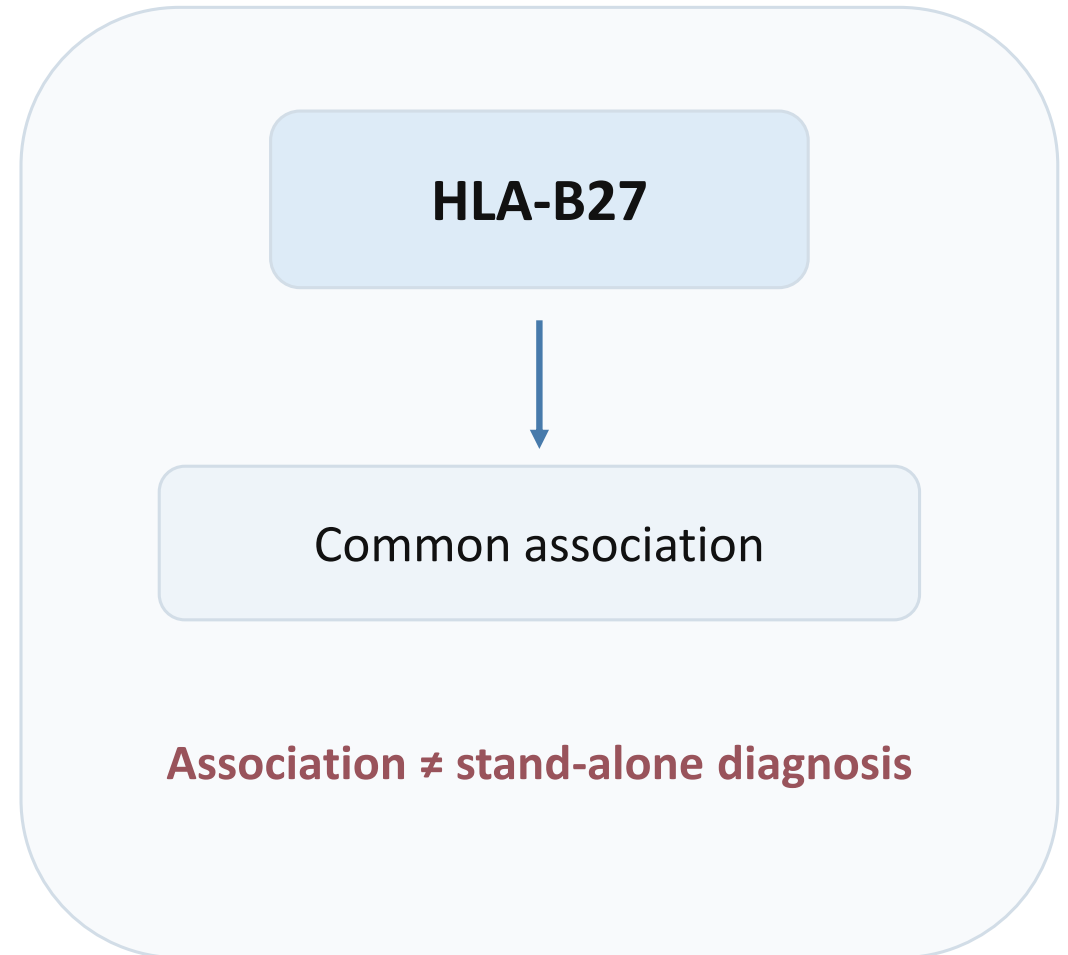
Axial involvement

HLA-B27 association

New bone formation

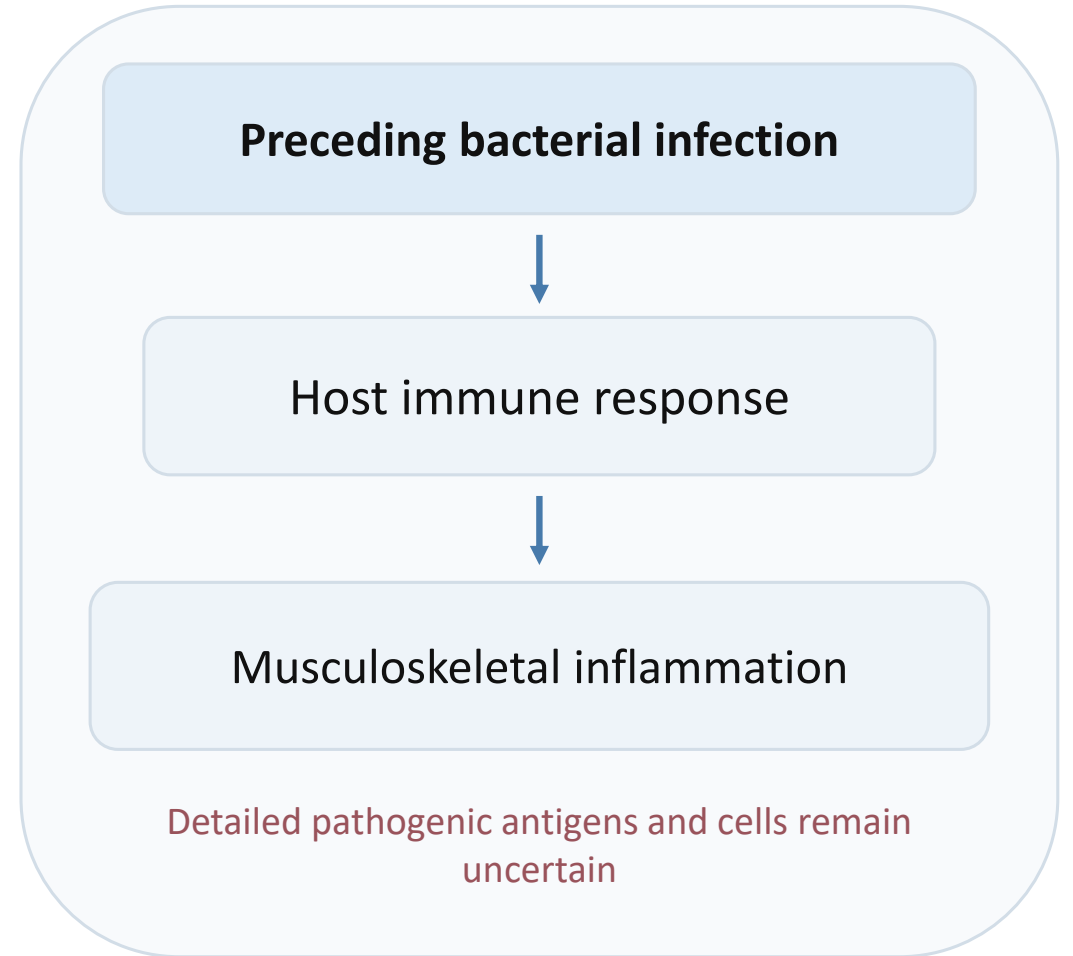
Genetic association is not diagnostic proof

- HLA-B27 as common—not universal—in reactive arthritis.
- The same association occurs in related spondyloarthropathies.
- Do not substitute a single susceptibility marker for the infection–joint–extra-articular pattern.



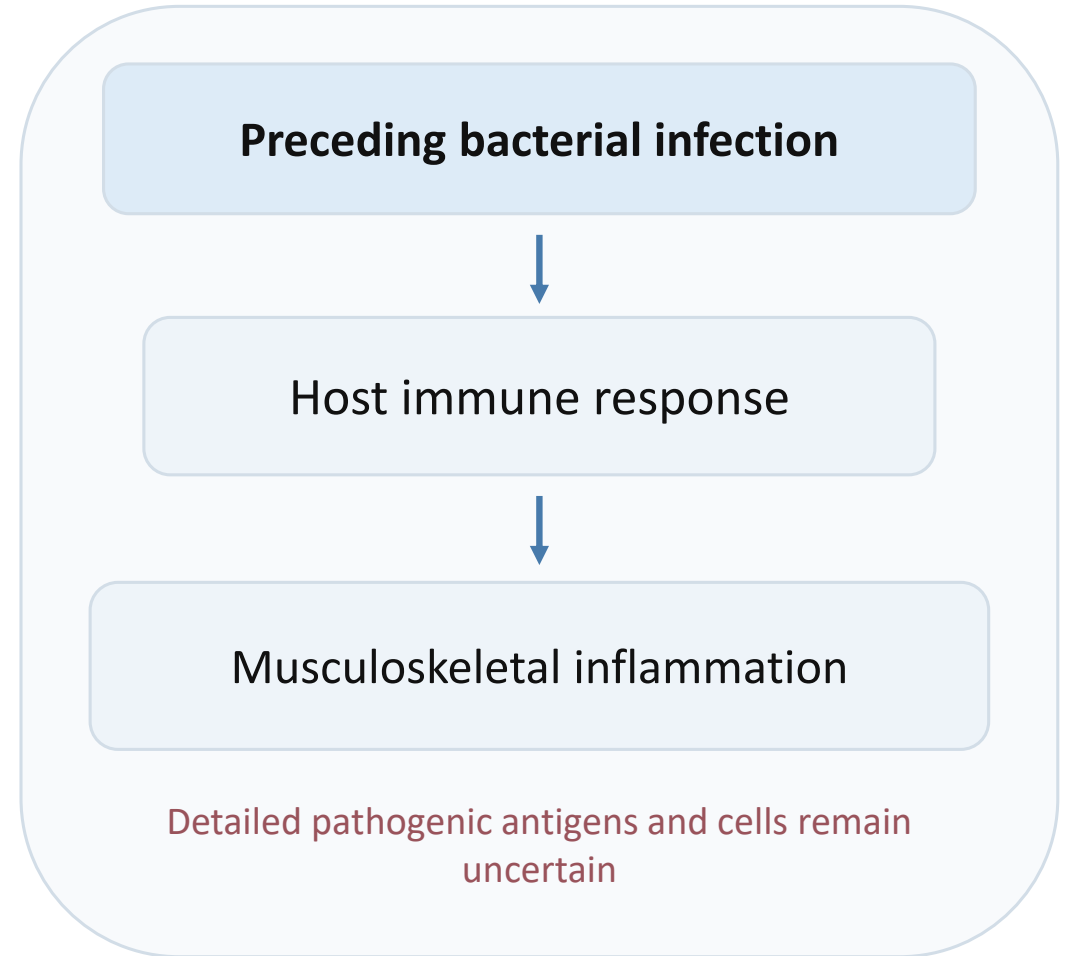
An immune-mediated explanation is proposed

- Robbins suggests T-cell responses in the spondyloarthropathy group.
- Potential microbial antigens may cross-react with musculoskeletal antigens.
- The putative antigens are not definitively identified in the supplied passage.



Pathogenic uncertainty must remain visible

- Infection precedes arthritis, but a precise causal immune pathway is not established here.
- HLA-B27 association does not identify the specific pathogenic antigen.
- The source does not assign a confirmed cell type, cytokine hierarchy, or organism-specific molecular pathway to reactive arthritis.



Typical age at presentation

- Young adults are the most commonly affected age group.
- Age is supportive epidemiologic context—not a substitute for the clinical phenotype.
- The source does not state that the syndrome is confined to young adults.

**Common in young adults;
Consider the presentation
rather than an age cutoff.**

Population frequency

- A global prevalence of approximately 30 per 100,000 adults.
- This is an approximate population estimate, not an individual predicted risk.
- Do not extrapolate this number to different settings or times without additional evidence.

≈30

Per 100,000 adults

Approximate global prevalence stated

A characteristic acute peripheral presentation

- The initial arthritis typically begins acutely.
- The joint pattern is usually asymmetric.
- A limited number of joints are affected (oligoarthritis).
- Lower-extremity joints are especially characteristic.

1

Knee: Frequent arthritis

2

Heel: Frequent enthesitis

3

Digits: Possible dactylitis

Asymmetry is a useful pattern clue

- Affected joints need not mirror one another across the body.
- An asymmetric distribution helps define the usual early phenotype.
- The term describes distribution, not the severity of the inflammatory process.

1

Knee: Frequent arthritis

2

Heel: Frequent enthesitis

3

Digits: Possible dactylitis

Monoarthritis and oligoarthritis are both included

- One inflamed joint is compatible with the expanded definition.
- A few inflamed joints are also compatible.
- The pattern must be interpreted alongside a recent relevant infectious episode.
- A single acutely swollen joint still requires consideration of other causes.

Monoarthritis

One joint

Included in definition

Context remains vital

Oligoarthritis

A few joints

Included in definition

Context remains vital

The lower limb is preferentially involved

- Initial inflammation frequently targets lower-extremity joints.
- The knee is singled out as an especially common site.
- The distribution differs from the small-joint emphasis typical of rheumatoid arthritis.

1

Knee: Frequent arthritis

2

Heel: Frequent enthesitis

3

Digits: Possible dactylitis

Knee arthritis and heel enthesitis are different lesions

- Knee arthritis signifies inflammation within a joint.
- Heel enthesitis signifies inflammation at tendon/ligament insertions into bone.
- Both may coexist in the same spondyloarthropathy phenotype.

Knee arthritis

Synovial joint

Swollen knee

Peripheral arthritis

Heel enthesitis

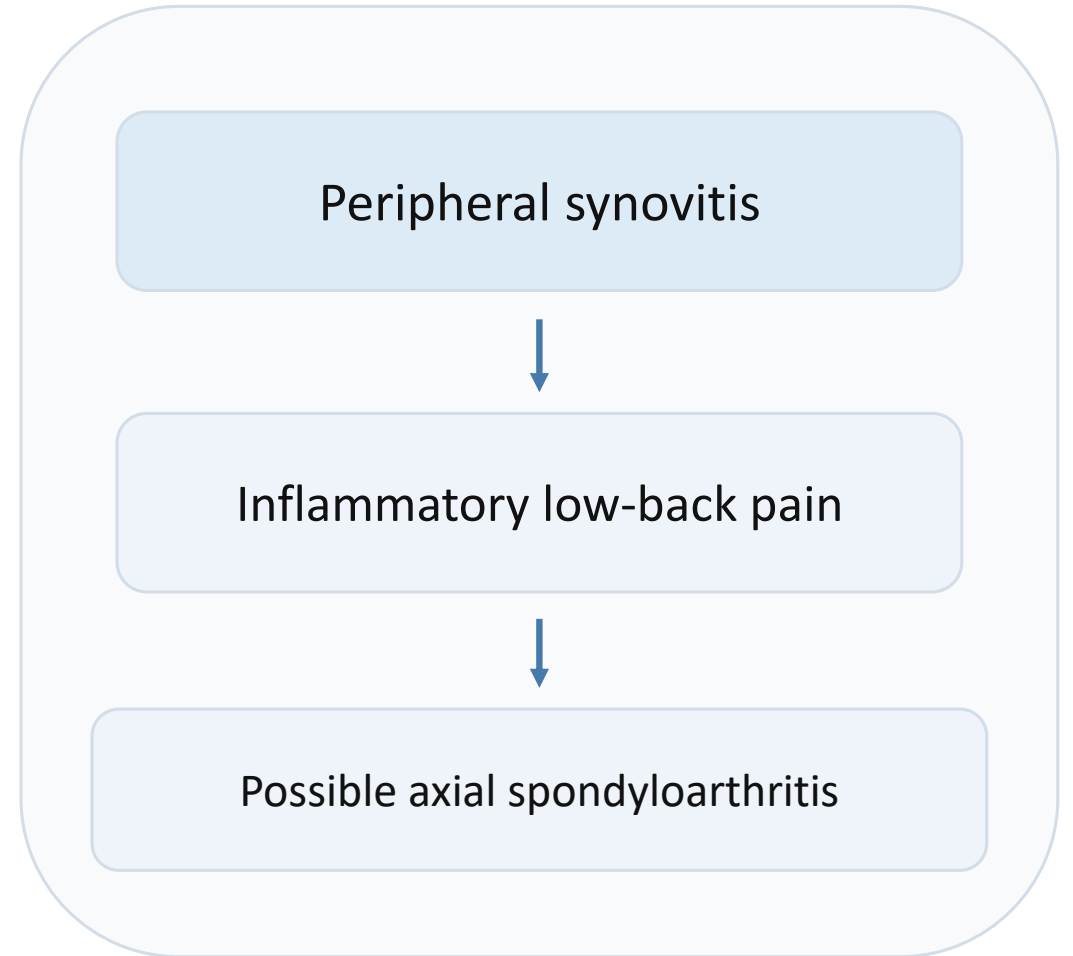
Insertional site

Swollen heel

Enthesal
inflammation

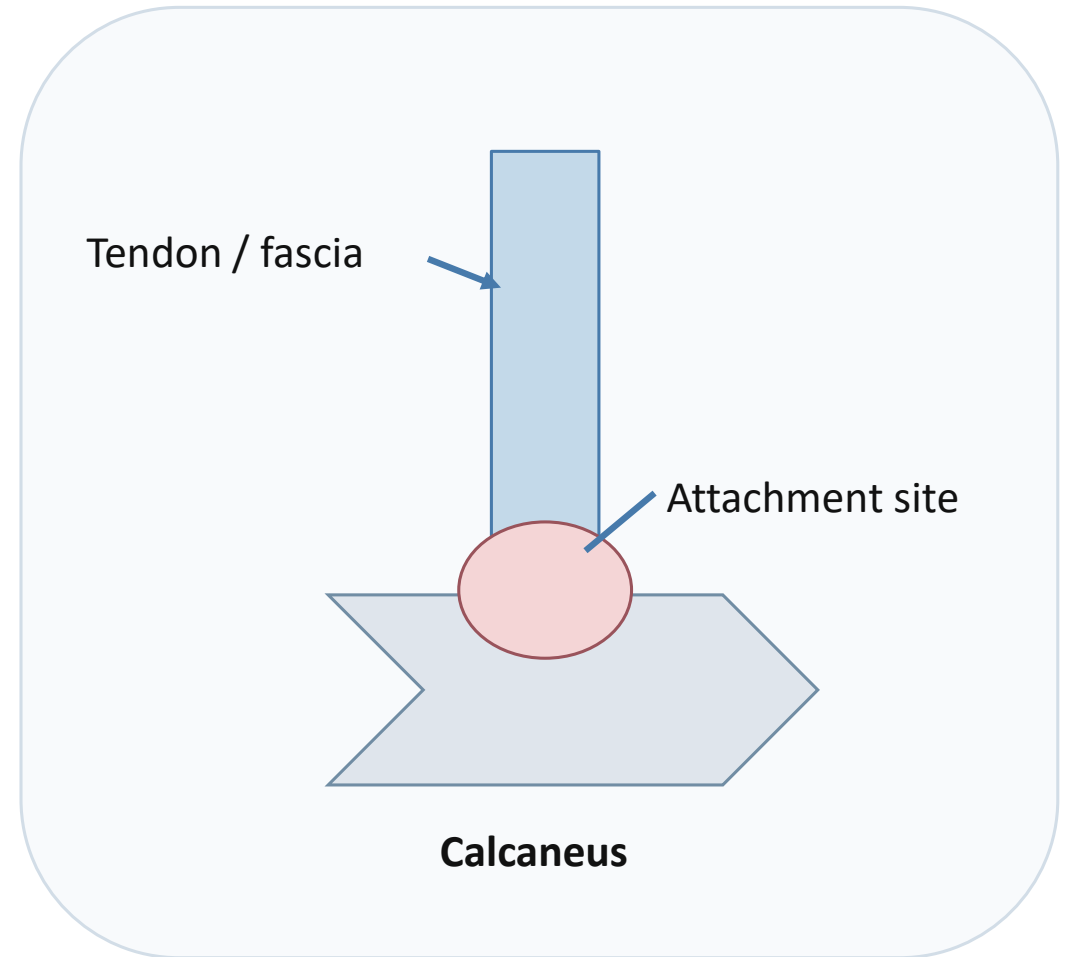
Inflammatory low-back pain extends the phenotype

- Inflammatory low-back pain commonly accompanies the peripheral arthritis.
- This symptom signals possible involvement of the axial musculoskeletal system.
- Pain in the back can coexist with knee-predominant lower-extremity disease.



An enthesis is a tendon/ligament attachment

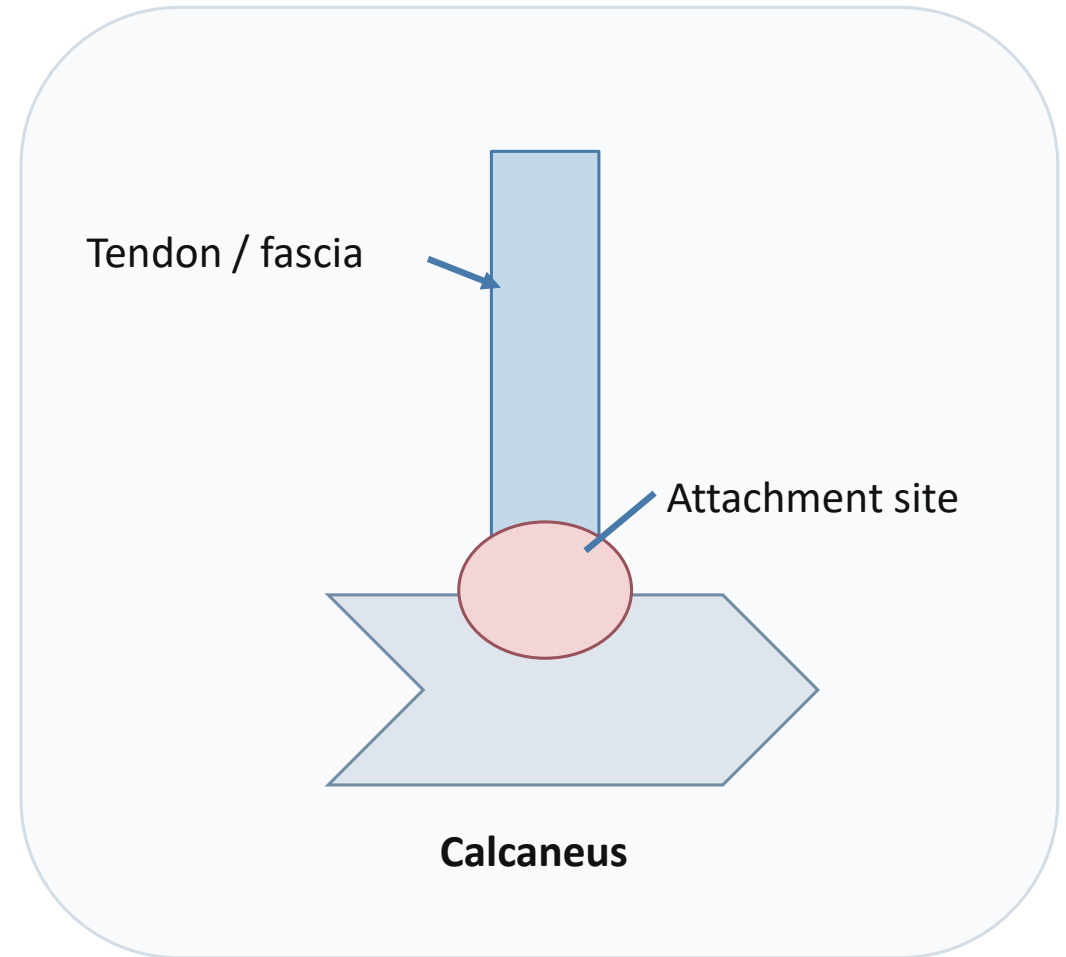
- Enthesitis means inflammation where a tendon or ligament attaches to bone.
- Such lesions are prominent within the spondyloarthropathy family.
- At the heel, the key calcaneal insertions include Achilles tendon and plantar fascia.



Simplified editable enthesis schematic; Not a specimen.

Achilles tendon insertion: A characteristic site

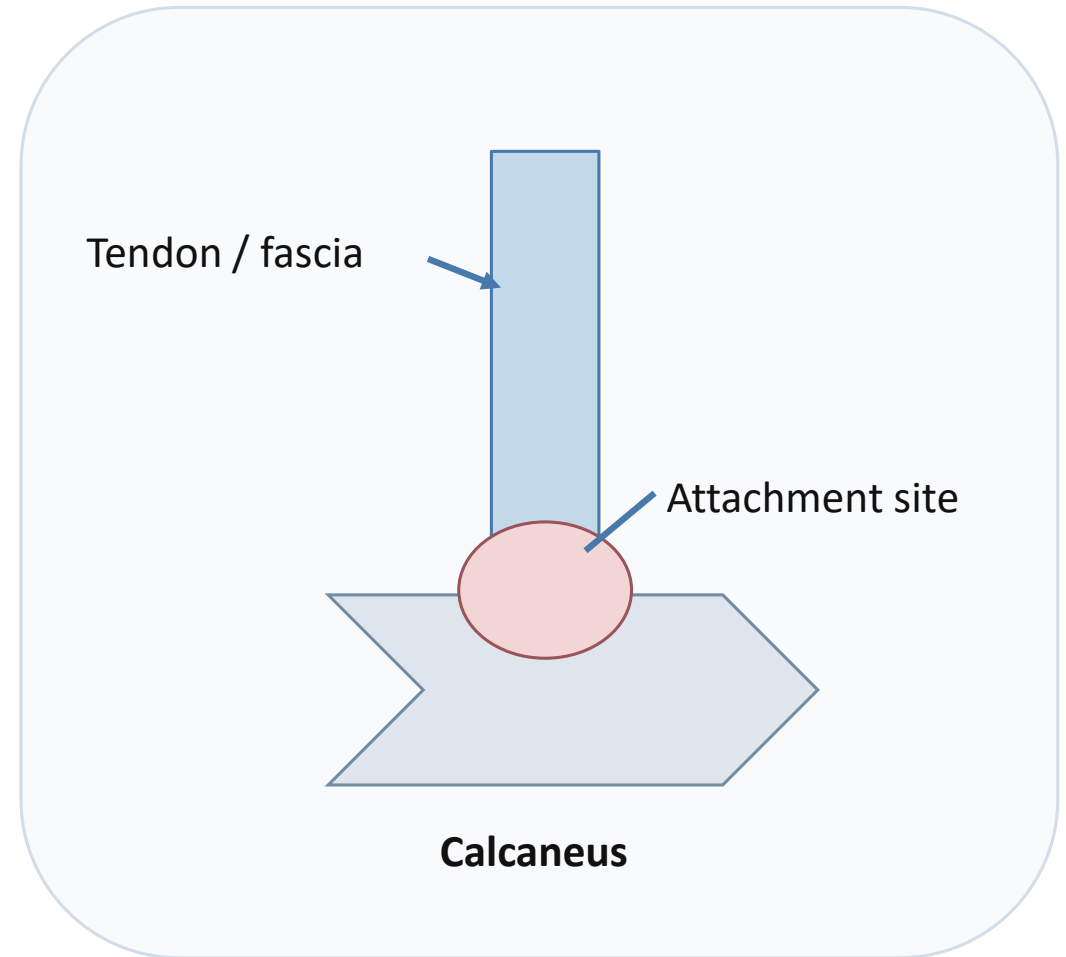
- The Achilles tendon inserts onto the calcaneus.
- Inflammation at this enthesis contributes to heel swelling.
- A complaint centered at the tendon insertion is distinct from primary ankle-joint synovitis.



Simplified editable illustration of insertional inflammation.

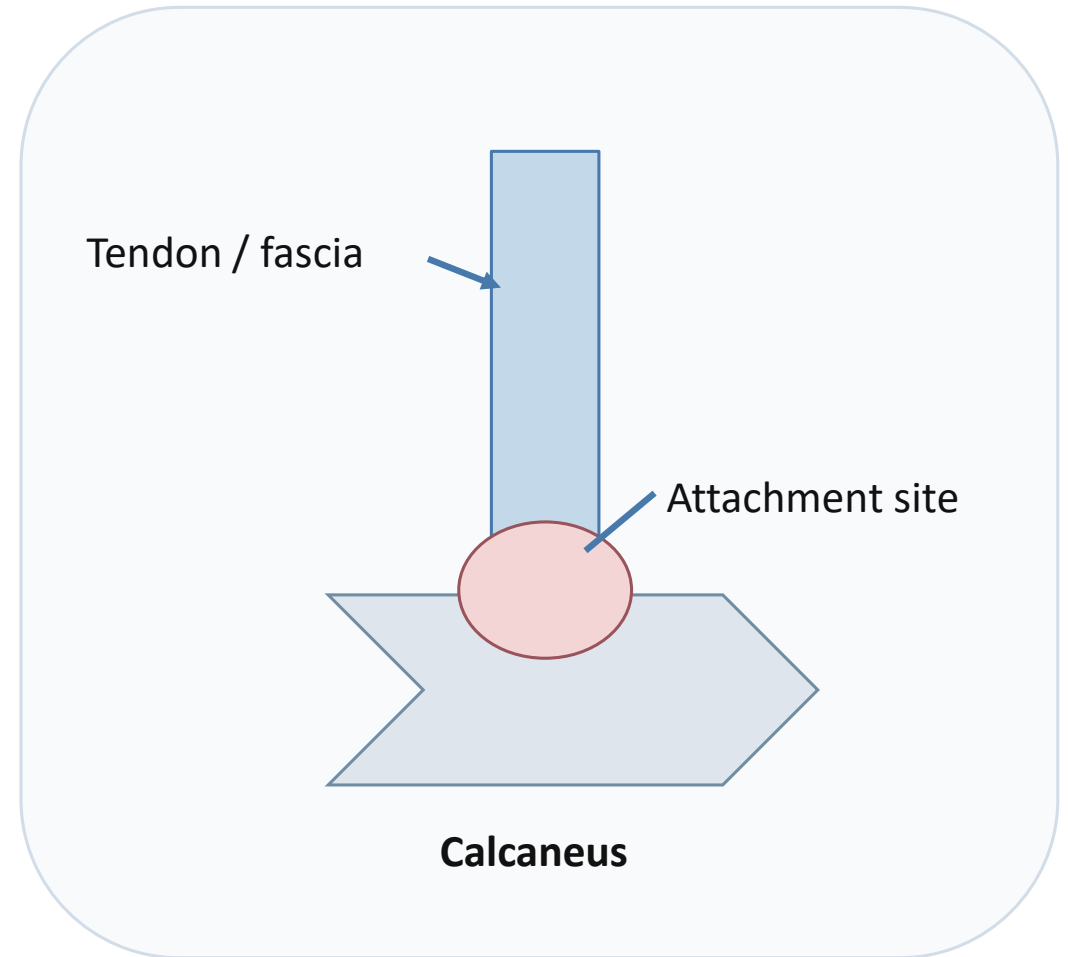
Plantar fascia insertion: Another heel target

- The plantar fascia insertion on the calcaneus.
- Inflammation at this site is part of the enthesitis pattern.
- Concurrent Achilles and plantar insertional symptoms localize pathology to the heel entheses.



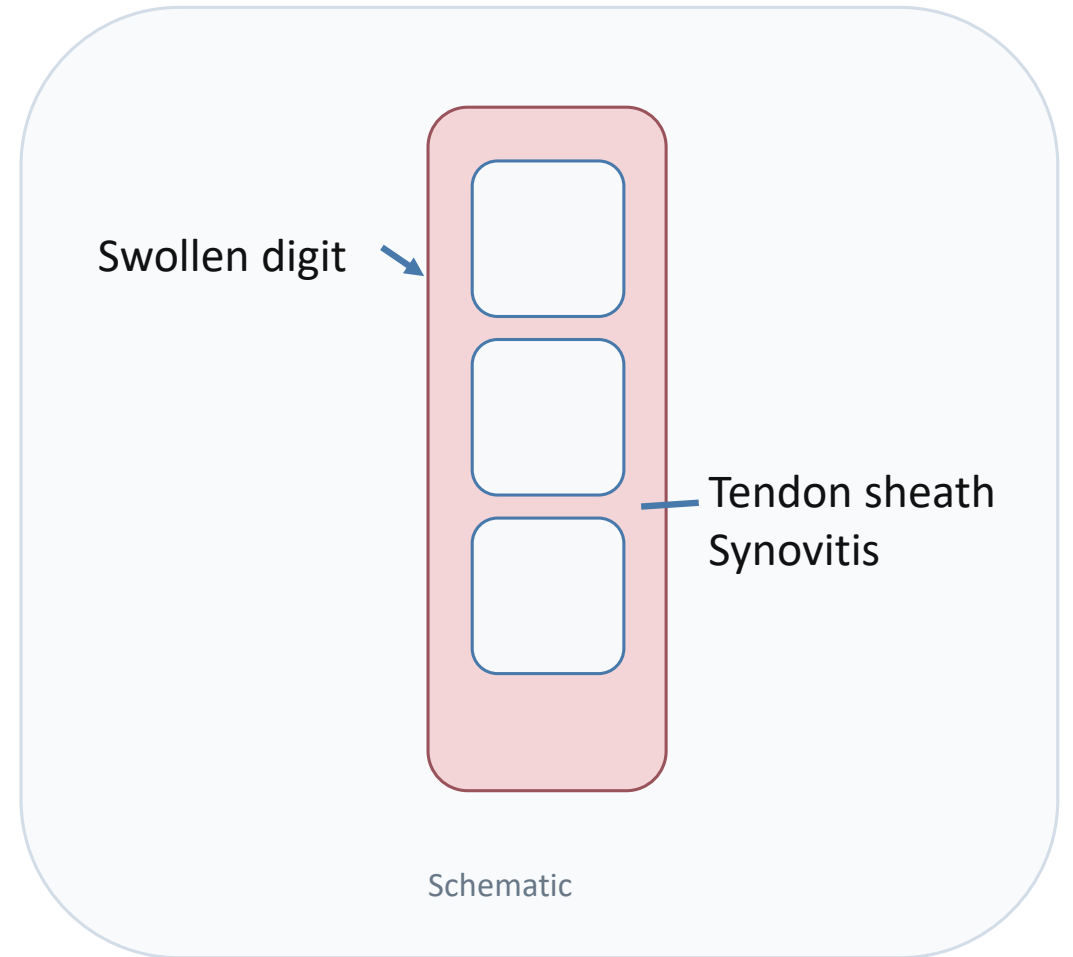
Why the heel becomes swollen

- The immediate lesion is inflammation at a tendon/ligament insertion.
- The calcaneus is the bony attachment common to the named heel sites.
- This anatomy explains the characteristic heel-centered swelling.



Dactylitis produces a “sausage” digit

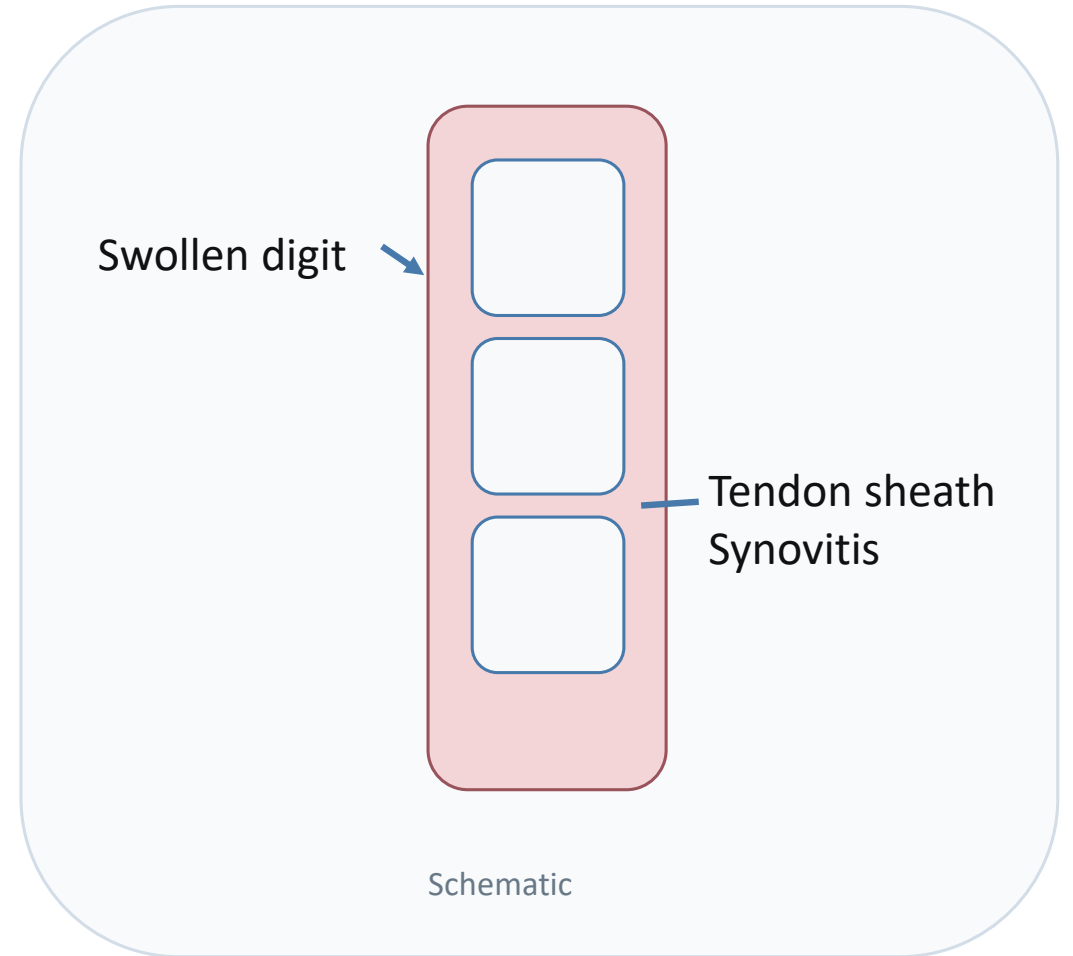
- Dactylitis is inflammation affecting a digit.
- It is present in a minority of patients with reactive arthritis.
- Diffuse swelling produces the characteristic sausage-like appearance.



Original schematic of a swollen digit; Not a clinical photograph.

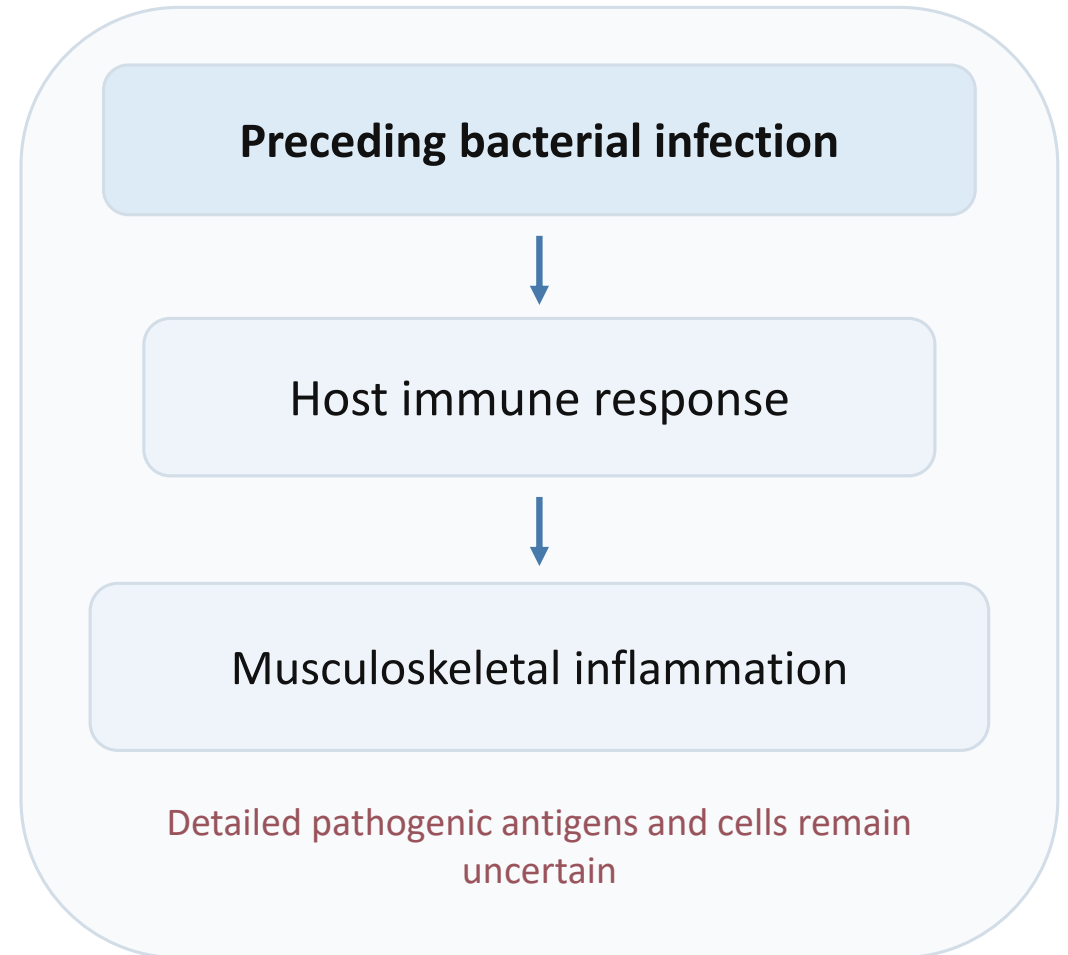
Tendon-sheath synovitis explains dactylitis

- Robbins specifically attributes digit swelling to synovitis of a digital tendon sheath.
- The inflammation is not limited to one interphalangeal joint.
- This mechanism accounts for the diffuse digit contour.



Inflammation can be followed by ossification

- Tendoligamentous insertion sites can undergo ossification.
- Calcaneal spurs and other bony outgrowths may result.
- This is a structural consequence of insertional disease—not a universal early finding.



The musculoskeletal pattern is more than synovitis

- Peripheral joint inflammation: Often asymmetric, lower-extremity oligoarthritis.
- Enthesal disease: Achilles and plantar fascia insertions.
- Digit disease: Tendon-sheath synovitis with dactylitis.
- Axial disease: Inflammatory lower-back pain and possible spondyloarthritis.

Infection precedes arthritis

Asymmetric lower-limb involvement

Enthesitis $\pm$ dactylitis

Extra-articular features possible

Ocular involvement: Conjunctivitis

- Conjunctivitis is one component of the classical triad.
- It belongs to the extra-articular manifestations, not the joint lesion itself.
- The clinical spectrum remains recognizable even when other parts of the triad are absent.

Eyes

Conjunctivitis · uveitis

Urogenital

Urethritis · cervicitis · balanitis

Mucosa / skin

Ulcers · nail changes

Heart

Aortic insufficiency (possible)

Ocular involvement also includes uveitis

- Uveitis is explicitly listed among extra-articular manifestations.
- It expands ocular involvement beyond classical conjunctivitis.
- The source does not state a numerical frequency or provide detailed ophthalmic grading.

Eyes

Conjunctivitis · uveitis

Urogenital

Urethritis · cervicitis · balanitis

Mucosa / skin

Ulcers · nail changes

Heart

Aortic insufficiency (possible)

Genitourinary involvement: Urethritis

- Nongonococcal urethritis is a classical component.
- Genitourinary symptoms can establish the relevant antecedent clinical context.
- Remember the broader entity can occur without the entire classical triad.

Eyes

Conjunctivitis · uveitis

Urogenital

Urethritis · cervicitis · balanitis

Mucosa / skin

Ulcers · nail changes

Heart

Aortic insufficiency (possible)

Cervicitis and balanitis are part of the spectrum

- Cervicitis is included in the classical urethritis/cervicitis formulation.
- Balanitis is included in the broader extra-articular list.
- The urogenital manifestations are not identical in every patient.

Eyes Conjunctivitis · uveitis

Urogenital Urethritis · cervicitis · balanitis

**Mucosa /
skin** Ulcers · nail changes

Heart Aortic insufficiency (possible)

Mucosal ulceration may accompany arthritis

- Mucosal ulcers are a recognized extra-articular manifestation.
- A mucosal lesion should be integrated with the musculoskeletal and infection history.
- No characteristic biopsy morphology is supplied in this Robbins subsection.

Eyes

Conjunctivitis · uveitis

Urogenital

Urethritis · cervicitis · balanitis

Mucosa / skin

Ulcers · nail changes

Heart

Aortic insufficiency (possible)

Skin and nail abnormalities can be psoriasiform

- The textbook explicitly mentions psoriasis-like nail changes.
- This is a described cutaneous feature, not a claim that patients necessarily have psoriasis.
- Recognition of a nail phenotype widens the extra-articular examination.

Eyes

Conjunctivitis · uveitis

Urogenital

Urethritis · cervicitis · balanitis

Mucosa / skin

Ulcers · nail changes

Heart

Aortic insufficiency (possible)

Cardiac valvular involvement is possible

- Cardiac valvular disease appears's extra-articular list.
- Aortic insufficiency is the example specified.
- No prevalence, screening recommendation, or treatment guidance is provided in the source passage.

Eyes

Conjunctivitis · uveitis

Urogenital

Urethritis · cervicitis · balanitis

Mucosa / skin

Ulcers · nail changes

Heart

Aortic insufficiency (possible)

Extra-articular disease can span four domains

- Eye: Conjunctivitis and uveitis.
- Urogenital tract: Urethritis, cervicitis, balanitis.
- Mucocutaneous tissue: Mucosal ulcers and psoriasis-like nail changes.
- Cardiac valves: Aortic insufficiency is an uncommon potential concern, frequency unspecified.

Eyes

Conjunctivitis · uveitis

Urogenital

Urethritis · cervicitis · balanitis

Mucosa / skin

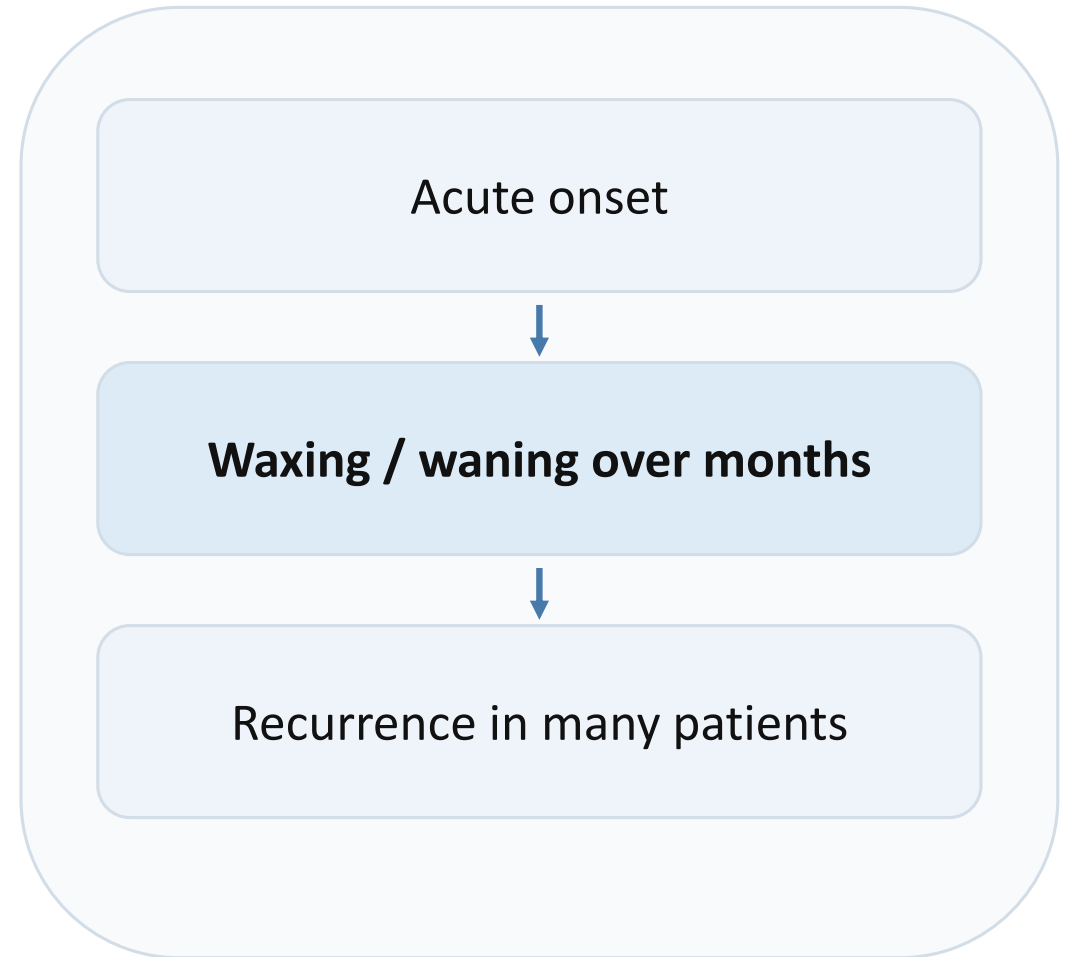
Ulcers · nail changes

Heart

Aortic insufficiency (possible)

Arthritis may wax and wane for months

- A typical episode is not necessarily a single continuously worsening event.
- Fluctuations over a period of months.
- The longitudinal course may include remissions and renewed symptoms.



Recurrence occurs in nearly half of patients

- Recurrent arthritis in nearly 50% of patients.
- Recurrent tendinitis and lumbosacral pain are part of the same long-term burden.
- This estimate does not imply identical duration or severity for every patient.

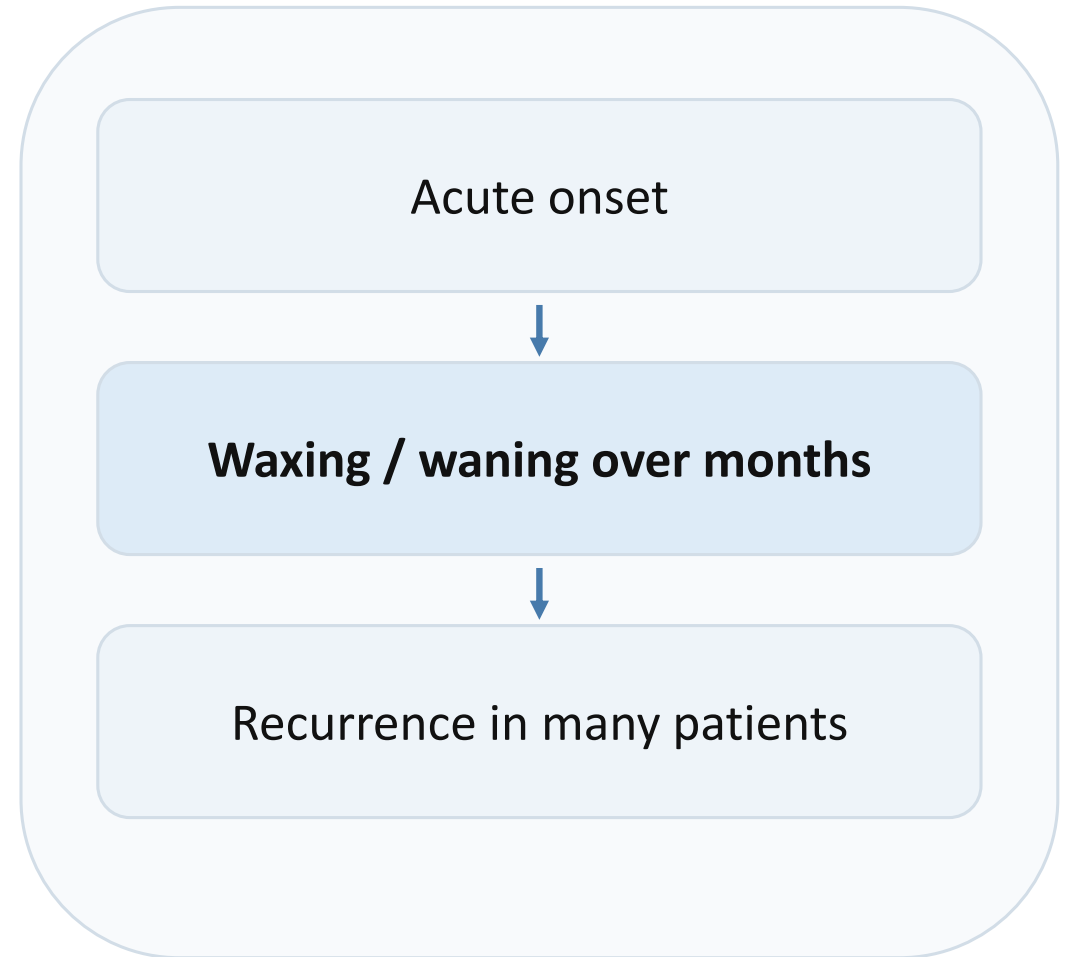
≈50%

Have recurrent symptoms

Robbins: Nearly half experience recurrence

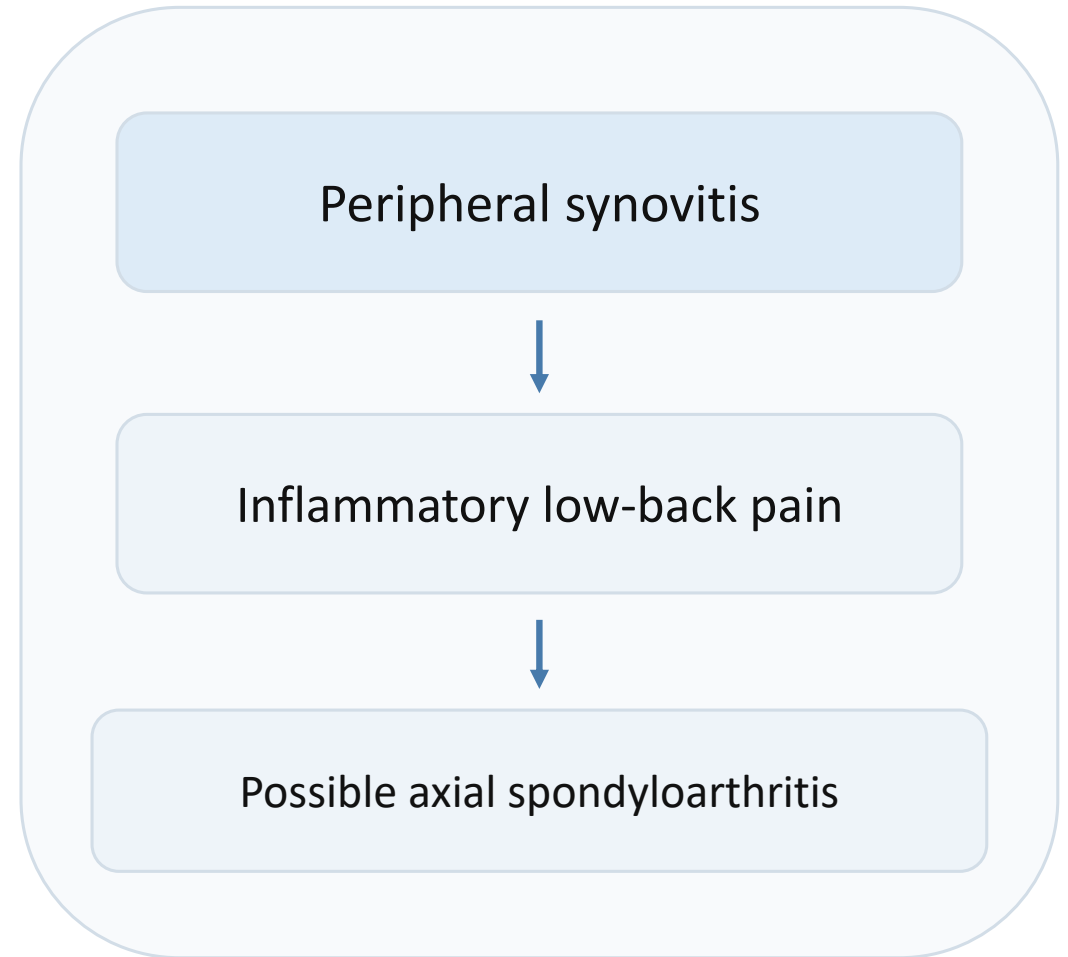
Recurrent symptoms need not be purely articular

- Arthritis can recur.
- Tendinitis can recur even when the most prominent complaint is not joint swelling.
- Lumbosacral pain may persist or recur as an axial feature.



Spinal involvement can resemble ankylosing spondylitis

- Some patients develop a spondyloarthritis phenotype.
- Axial involvement may be indistinguishable from ankylosing spondylitis.
- This highlights clinical overlap within the HLA-B27-associated disease family.



Reactive arthritis versus ankylosing spondylitis

Feature	Reactive arthritis	Ankylosing spondylitis
Defining context	After GU / GI infection	Axial-predominant inflammatory disease
Peripheral joints	Asymmetric lower-limb oligoarthritis	Hips, knees, shoulders may be involved
Axial involvement	Possible; May be indistinguishable	Sacroiliac and vertebral joints prominent
HLA-B27	Common	≈90% positive

Comparison derives from adjacent Robbins subsections; Not a formal diagnostic algorithm.

Reactive arthritis versus direct infectious arthritis

Feature	Reactive arthritis	Infectious arthritis
Clinical relationship	Arthritis after a distant infection	Microorganisms seed the joint
Common pattern	Asymmetric mono-/oligoarthritis	Often acutely painful monoarthritis
Mechanism in source	Postinfectious inflammatory syndrome	Hematogenous, direct, or contiguous spread
Diagnostic priority	Synthesize triggering illness and phenotype	Identify organisms in joint fluid when suspected

Infection inside the joint remains a separate consideration; The comparison is not a rule-out test.

A rapidly destructive infected joint is a critical mimic

- Microorganisms can reach joints through blood, inoculation, or contiguous spread.
- Cartilage has limited regenerative capacity, so bacterial destruction may become permanent.
- A suspected suppurative joint infection requires prompt identification and effective antimicrobial treatment.

Acute swollen joint



Direct joint infection must be considered

Rapid destruction in suppurative arthritis.

Rheumatoid arthritis has a different usual pattern

- RA commonly has a chronic, symmetric inflammatory polyarthritis pattern.
- Reactive arthritis typically begins as acute asymmetric lower-limb oligoarthritis.
- Both can cause joint swelling; Distribution and clinical context improve discrimination.
- The comparison does not exclude atypical presentations.

Reactive	Rheumatoid
Postinfectious context	Autoimmune synovitis
Asymmetric / few joints	Usually symmetric / multiple
Entheseal clues	Progressive synovial destruction

Clinical synthesis: Clues should converge

- Recent gastrointestinal or genitourinary illness: Temporal antecedent.
- Acutely inflamed knee or another asymmetric lower-limb distribution: Peripheral phenotype.
- Heel enthesitis, dactylitis, or inflammatory back pain: Spondyloarthritis context.
- Ocular, genitourinary, and mucocutaneous features: Extra-articular support.

Infection precedes arthritis

Asymmetric lower-limb involvement

Enthesitis $\pm$ dactylitis

Extra-articular features possible

Case application I: Postgenitourinary symptoms

A young adult recalls urethritis followed two weeks later by knee swelling and new eye redness. No symptoms from other organ systems are reported.

Which elements make the classical syndrome recognizable?

Clinical reasoning

Map the vignette to the triad and the timeline.

Discuss the temporal relationship, distribution, and extra-articular clues.

Case I: Connect three clinical domains

- Arthritis: The swollen knee.
- Urogenital component: Preceding urethritis.
- Ocular component: Conjunctival symptoms, compatible with the classical description.
- Timing supports the postinfectious interpretation but is not a microbiologic diagnosis.

Arthritis

Urethritis / cervicitis

Conjunctivitis

Case application II: A GI-triggered phenotype

A young adult develops acute swelling of one knee after a gastrointestinal illness. Examination reveals heel swelling at the Achilles insertion; Conjunctivitis is absent.

Does absence of conjunctivitis invalidate the syndrome?

Clinical reasoning

Use the expanded mono-/oligoarticular definition.

Discuss the temporal relationship, distribution, and extra-articular clues.

Case II: The expanded definition matters

- A preceding gastrointestinal infection supplies the relevant clinical context.
- Monoarthritis plus Achilles enthesitis fits the described musculoskeletal phenotype.
- The full classical triad is not mandatory under the broader Robbins description.
- A precise causative organism cannot be deduced from the musculoskeletal findings alone.

1

Knee: Frequent arthritis

2

Heel: Frequent enthesitis

3

Digits: Possible dactylitis

Case application III: Distinguish direct infection

An adult develops abrupt severe pain and swelling confined to one knee. No preceding GU or GI illness is recalled. The joint is very painful to move.

What high-consequence competing process needs attention?

Clinical reasoning

Why is postinfectious arthritis not assumed?

Discuss the temporal relationship, distribution, and extra-articular clues.

Case III: Do not miss suppurative arthritis

- A directly infected joint can present with sudden severe monoarthritis.
- Joint aspiration yielding purulent fluid and the organism as diagnostic for suppurative arthritis.
- Joint destruction can progress rapidly; Recognition and antimicrobial treatment are urgent.
- The clinical vignette is deliberately insufficient to diagnose either condition.

Acute swollen joint

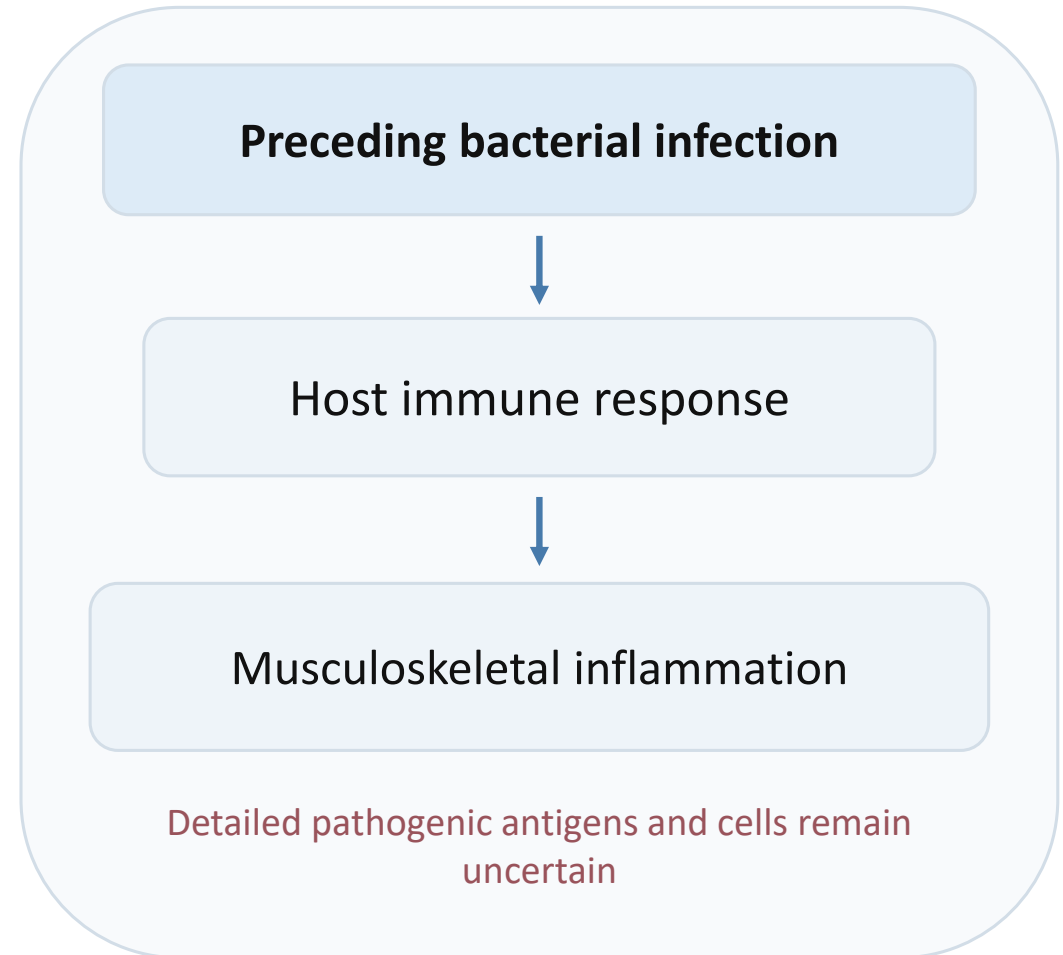


Direct joint infection must be considered

Rapid destruction in suppurative arthritis.

Integrated teaching model

- Trigger: Antecedent genitourinary or gastrointestinal infection.
- Host context: Frequent HLA-B27 association within a spondyloarthropathy phenotype.
- Inflammation: Peripheral joints, entheses, tendon sheaths, and sometimes axial structures.
- Clinical course: Waxing and waning episodes, with frequent recurrence.



Five practical recognition checks

- Was there a relevant infection days to weeks earlier?
- Is the arthritis acute, asymmetric, and predominantly lower-limb?
- Are heel entheses or whole digits inflamed?
- Are ocular, genitourinary, mucosal, skin/nail, or cardiac features present?
- Could the joint instead be directly infected?

Infection precedes arthritis

Asymmetric lower-limb involvement

Enthesitis $\pm$ dactylitis

Extra-articular features possible

Evidence boundaries of the Robbins subsection

- No formal classification or diagnostic criteria set is supplied.
- No reactive-arthritis-specific histologic photomicrograph or biopsy criteria are supplied.
- The precise causative immune antigen and cellular pathway are not defined.
- Management algorithms and laboratory sensitivity estimates are outside this supplied passage.

Do not present absent criteria, histology, or treatment regimens as textbook statements.

Final clinicopathologic synthesis

- Recognize an infection-associated asymmetric peripheral arthritis.
- Localize associated heel symptoms to entheses and swollen digits to tendon-sheath synovitis.
- Expect potential ocular, genitourinary, mucocutaneous, and axial manifestations.
- Anticipate a fluctuating course; Distinguish direct joint infection when clinically plausible.

Infection precedes arthritis

Asymmetric lower-limb involvement

Enthesitis $\pm$ dactylitis

Extra-articular features possible

References and source notes

- Robbins, Cotran & Kumar: Pathologic Basis of Disease. 11th edition (2026). Chapter 26, “Bones, Joints, and Soft Tissue Tumors,” pp. 1091–1093.
- Main subsection: “Reactive Arthritis,” p. 1092; adjacent sections: “Seronegative Spondyloarthropathies,” “Ankylosing Spondylitis,” and “Infectious Arthritis.”
- Lecture statements are based on the provided Markdown transcription. The original textbook PDF pages and textbook images were not provided for direct verification.

Diagrams are original editable schematics; constructed clinical vignettes are teaching examples.