

Infectious Arthritis

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Definition

Microbial invasion of the joint space not associated with bone involvement

Classification

- Non-gonococcal bacterial arthritis
- Gonococcal arthritis
- Brucella arthritis
- Tuberculous arthritis
- Mycoplasma arthritis
- Viral arthritis
- Lyme disease
- Syphilis
- Fungal arthritis

Non-gonococcal bacterial arthritis



Epidemiology

- Nongonococcal bacterial arthritis is the most potentially dangerous and destructive form of acute arthritis
- *Staphylococcus aureus* is the most common agent
- Yearly incidence :
2-10 / 100,000 (General population)
30-70 /100,000 (RA, joint prosthesis)
- Mortality 10 – 25%
- Morbidity 25 – 50%

Organisms in septic arthritis

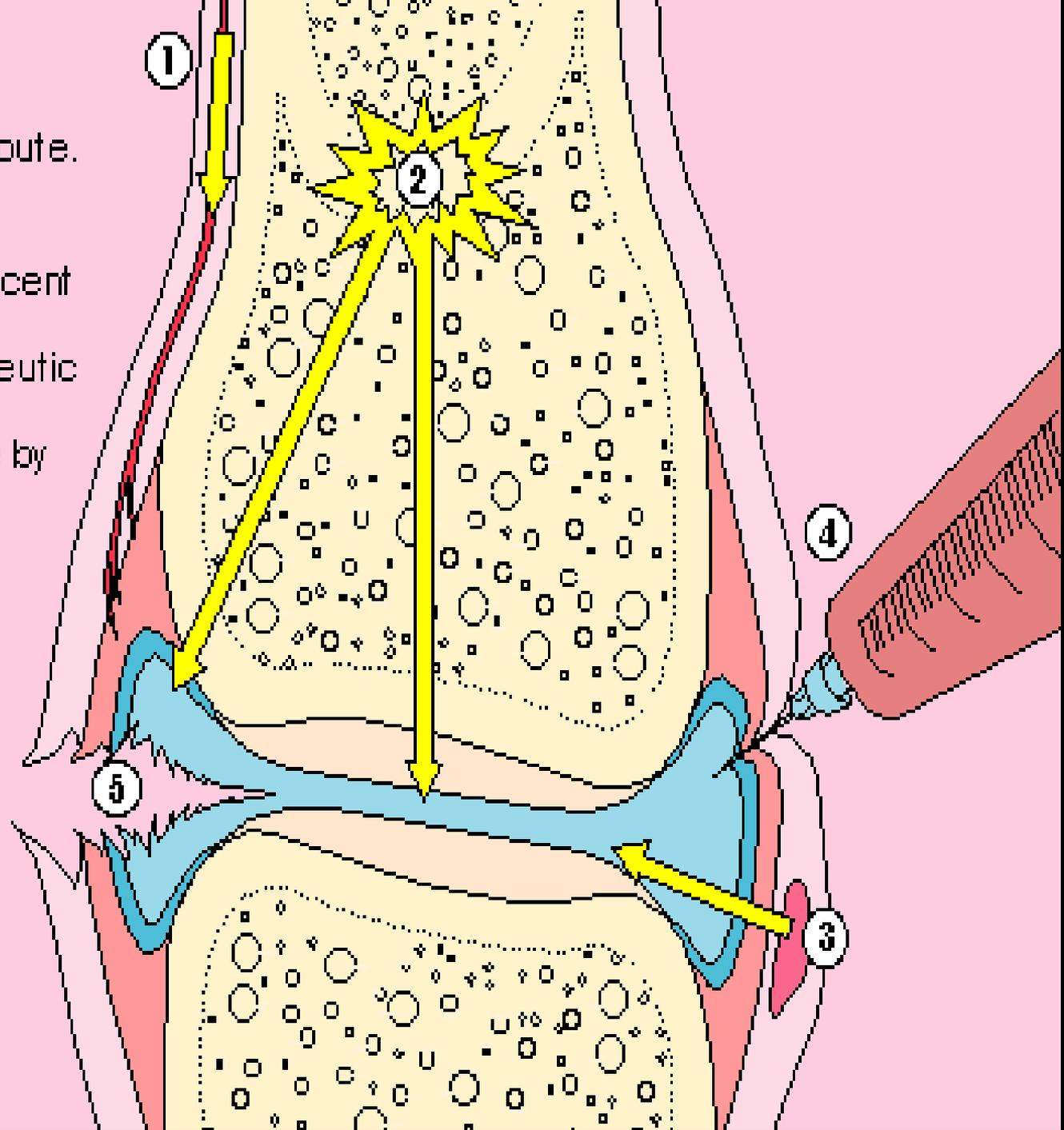
▫ **Gram -positive cocci**

- *S. aureus*
- *S. pyogenes*
- *S. pneumonia*
- *S. viridans group*

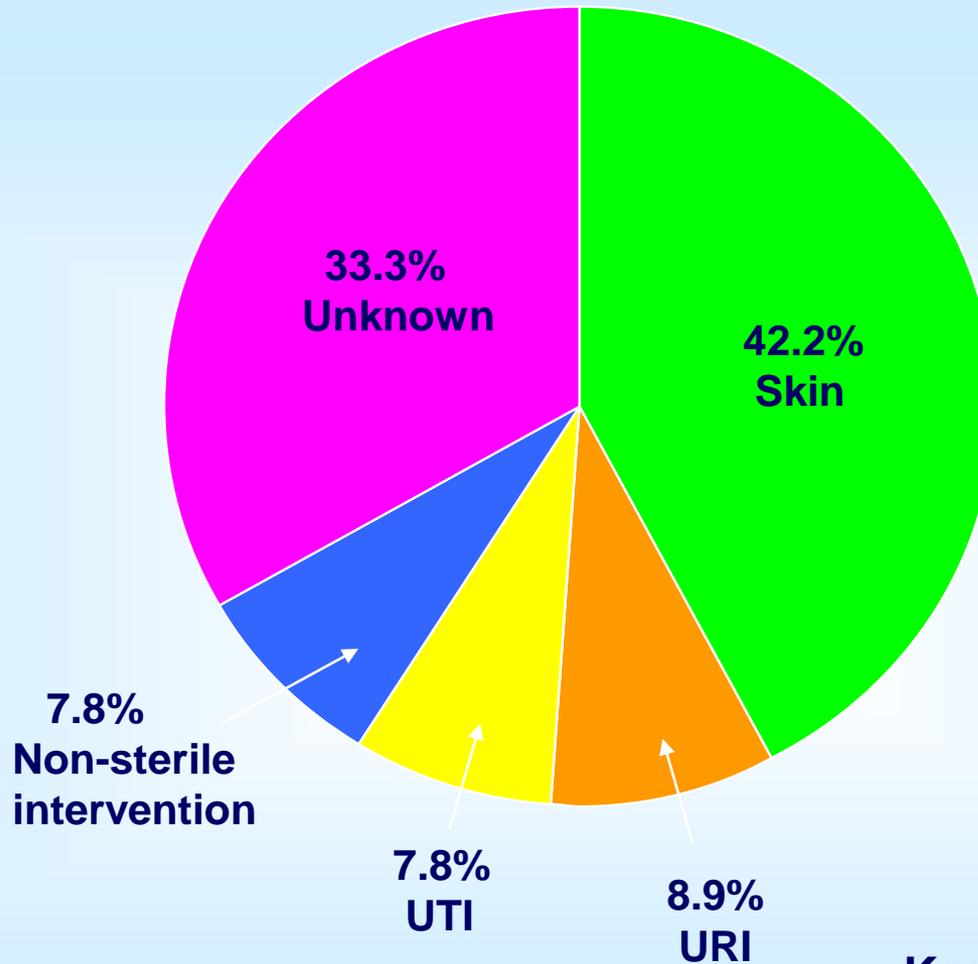
▫ **Gram-negative bacilli**

- *E. coli*
- *Salmonella*
- *Pseudomonas species*

- 1 - The hematogenous route.
- 2 - Dissemination from osteomyelitis.
- 3 - Spread from an adjacent soft tissue infection.
- 4 - Diagnostic or therapeutic measures.
- 5 - Penetrating damage by puncture or cutting.



Sources of Hematogenous Infections in Adults



Kaandorp CJE, *Ann Rheum Dis*,56:470-475; 1997

Risk factors

- Diabetes mellitus
- Immunodeficiency states
- Joint damage
- Skin infections
- Debilitated conditions
- Hemoglobinopathy
- Intravenous drug use
- Joint prostheses
- Indwelling catheter
- Neonate and elderly

Pathogenesis

Hematogenous spread

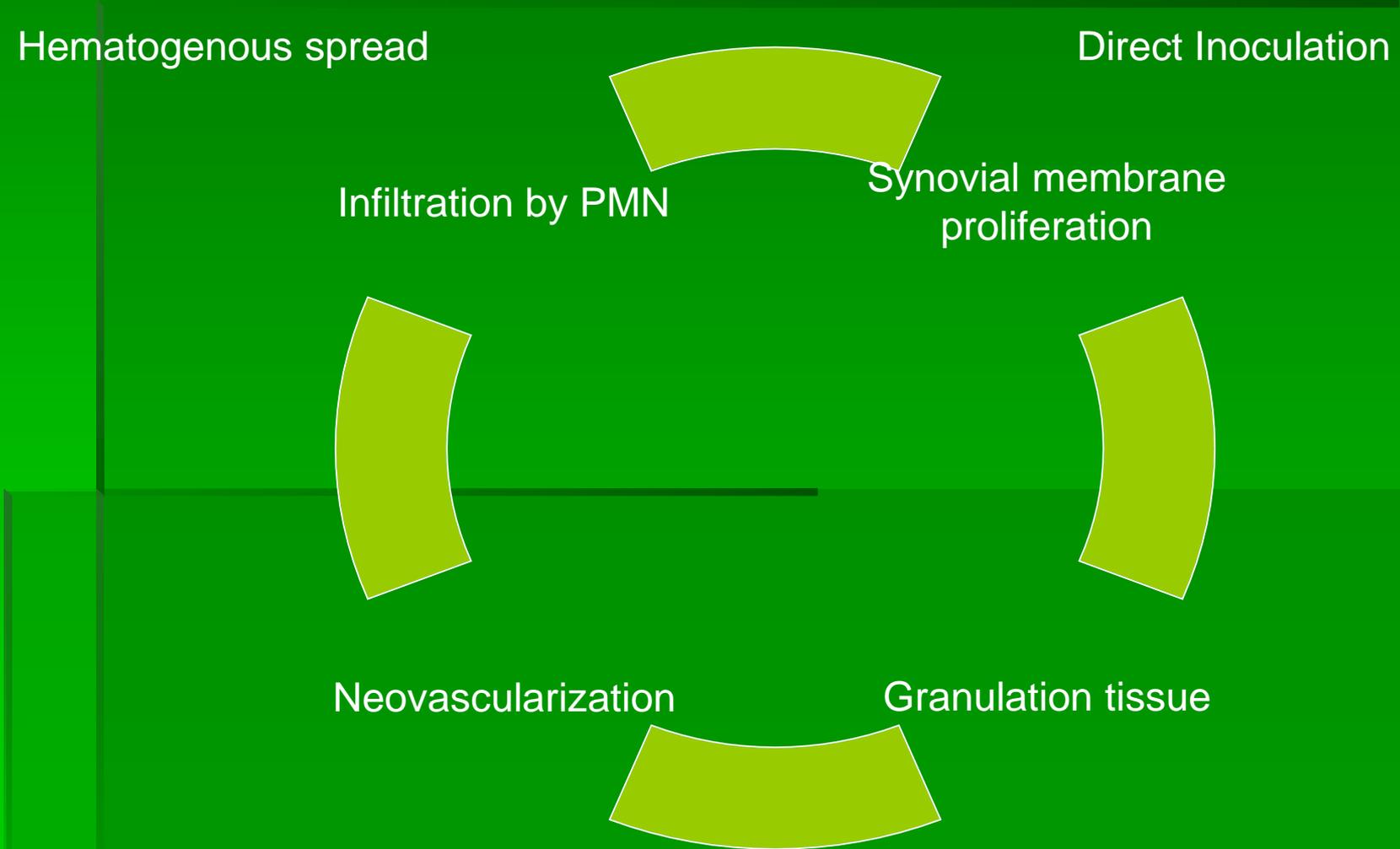
Direct Inoculation

Infiltration by PMN

Synovial membrane proliferation

Neovascularization

Granulation tissue



Clinical Manifestations

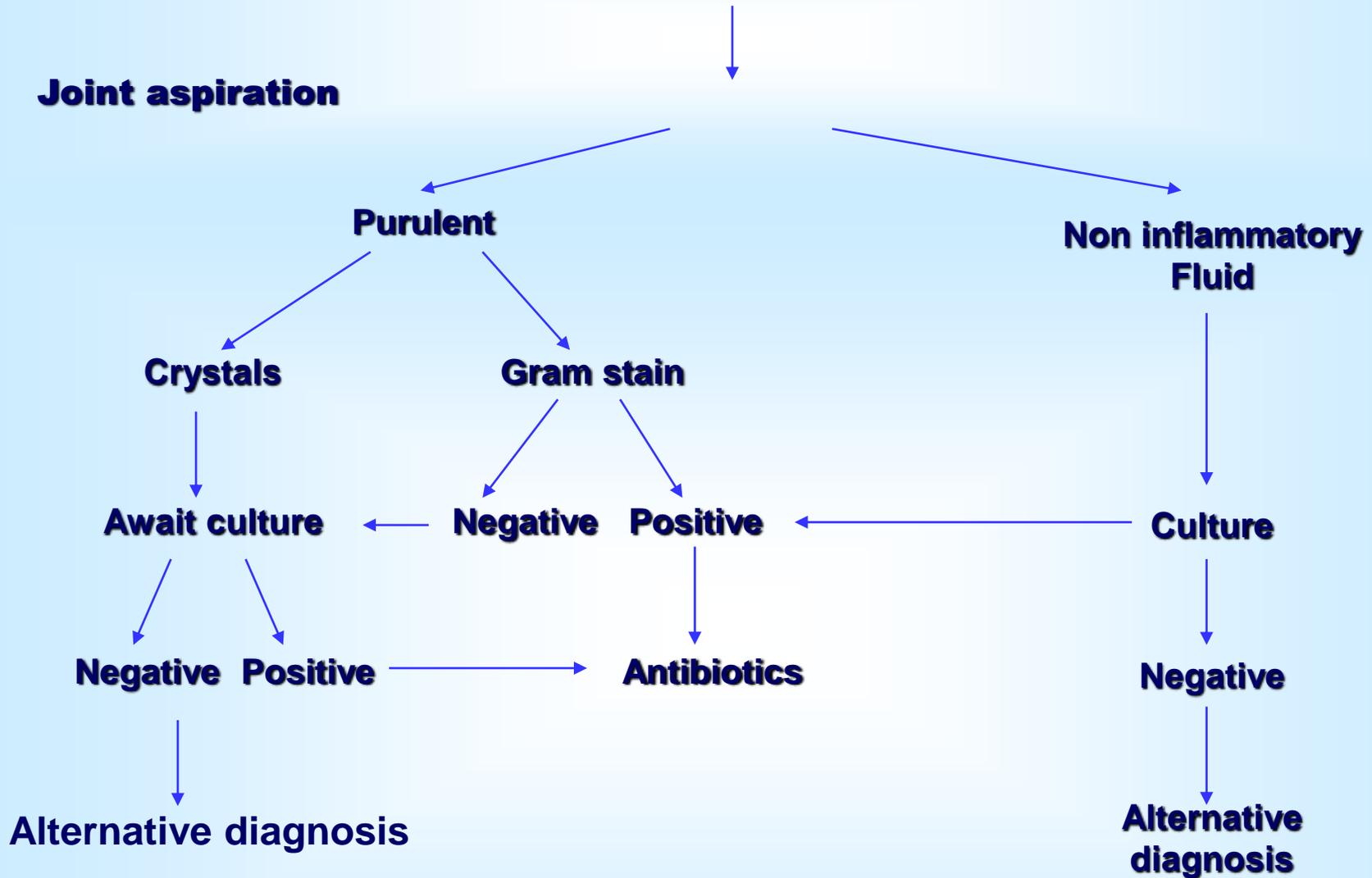
- Acute, monoarticular (knee most common)
- Chills, fevers, malaise, anorexia
- Painful warm, swollen, and fluid filled
- Approximately 20% oligoarticular or polyarticular
- There may be evidence of other site infection





A single (or less often 2 or 3) acute hot swollen joints(s)

Joint aspiration

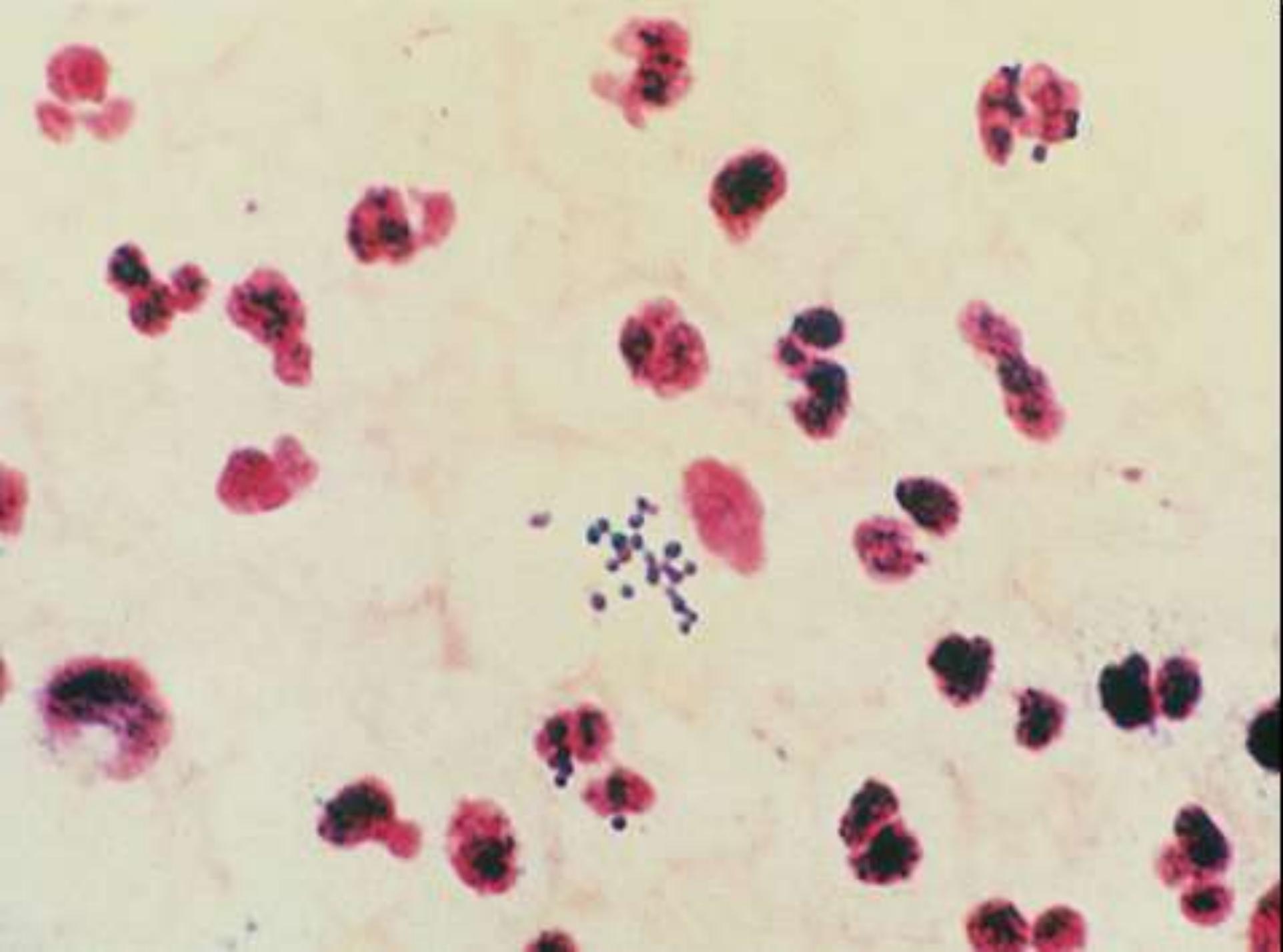


A diagnostic algorithm for the evaluation of a hot, swollen joint

Diagnosis

- Arthrocentesis
- Appearance: purulent
- Cell count: 50000-150000
- Gram's stain is positive in most cases
- Synovial fluid culture is positive in the majority of patients
- Blood culture, CBC, ESR
- Scintigraphy, CT scan, MRI







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Parenteral antibiotics

Positive gram stain

Yes

No

Gram + cocci

Gram - bacilli

Community-acquired

No

Yes

Vancomycin

Cefazolin

Third generation cephalosporin; plus aminoglycoside if pseudomonas likely

Await culture

Final antibiotic choice based on culture, sensitivity

Initial joint drainage

Hip, shoulder axial joint

Other joints

Arthroscopy or open drainage

Needle aspiration

Inadequate response

Arthroscopy or open drainage

Prognosis

- Mortality 10-15%
- Residual abnormality 30-50%

Risk Factors For Poor Prognosis

- Older age
- Preexisting joint disease
- Infected prosthetic material joints
- Polyarticular
- Delayed diagnosis
- Microorganisms

Gonococcal arthritis

Epidemiology

- Disseminated gonococcal infection
- Most common cause of acute septic arthritis in young sexually active individuals
- In 1-3% of patients infected with NG
- M/F: 1/3
- The majority have arthritis
- Recent menstruation

Epidemiology

- Pregnancy
- Terminal complement deficiencies

Clinical Manifestations

Two syndromes:

- ✱ A triad of tenosynovitis, dermatitis, and polyarthralgia without purulent arthritis
- ✱ Purulent arthritis without skin lesion

Clinical Manifestations

- Fever, chills and malaise

Clinical Manifestations

- Monoarthralgia, oligoarthralgia, or polyarthralgia
 - Diffuse migratory pattern
 - Knees, wrists, hands, and ankles are most involved
-

Clinical Manifestations

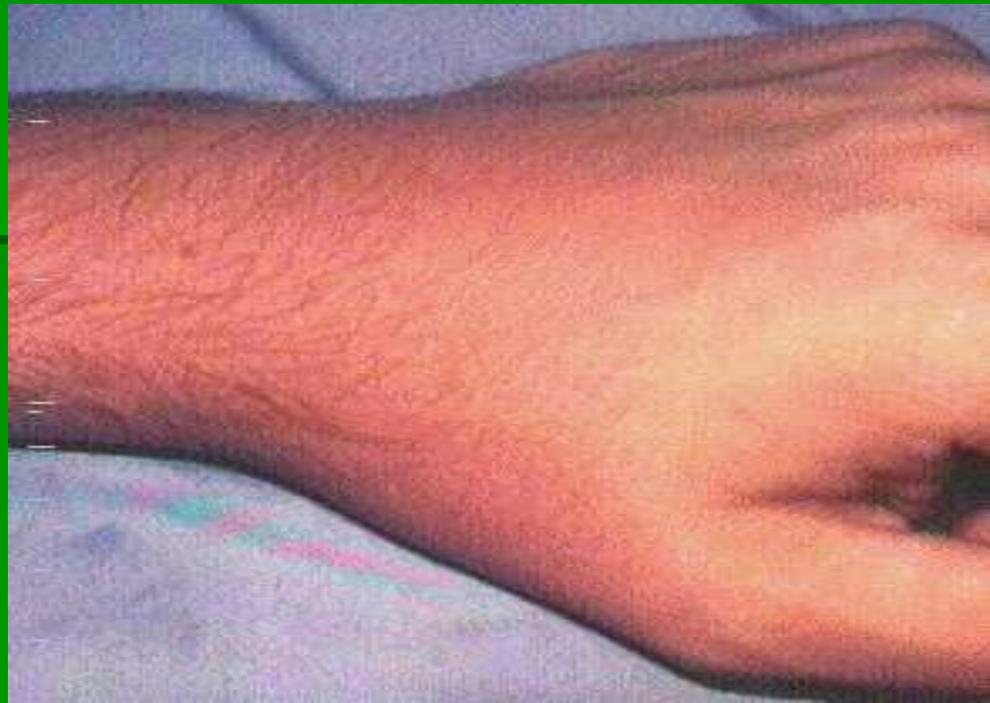
- Tenosynovitis: multiple tendons: writ, fingers, ankle, and toes

Clinical Manifestations

- Rash: macules, papules, necrosis, pustules, hemorrhage papules
- Few in number

Clinical Manifestations

- Pericarditis, endocarditis, mycocarditis, aortitis
- Meningitis
- Osteomyelitis





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Purulent Arthritis

- Most are afibrile
- Knee, wrist, ankles
- One or more joints
- Other clinical signs of DGI are rare

Differential diagnosis

- Reiter's syndrome
- Bacterial arthritis
- Juvenile Rheumatoid Arthritis
- Meningococccemia
- Bacterial Endocarditis
- Acute rheumatic fever

Diagnosis

- History and physical examination
- Culture genitourinary tract, rectum, pharynx
- Organism rarely found in synovial fluid, blood, or skin
- PCR



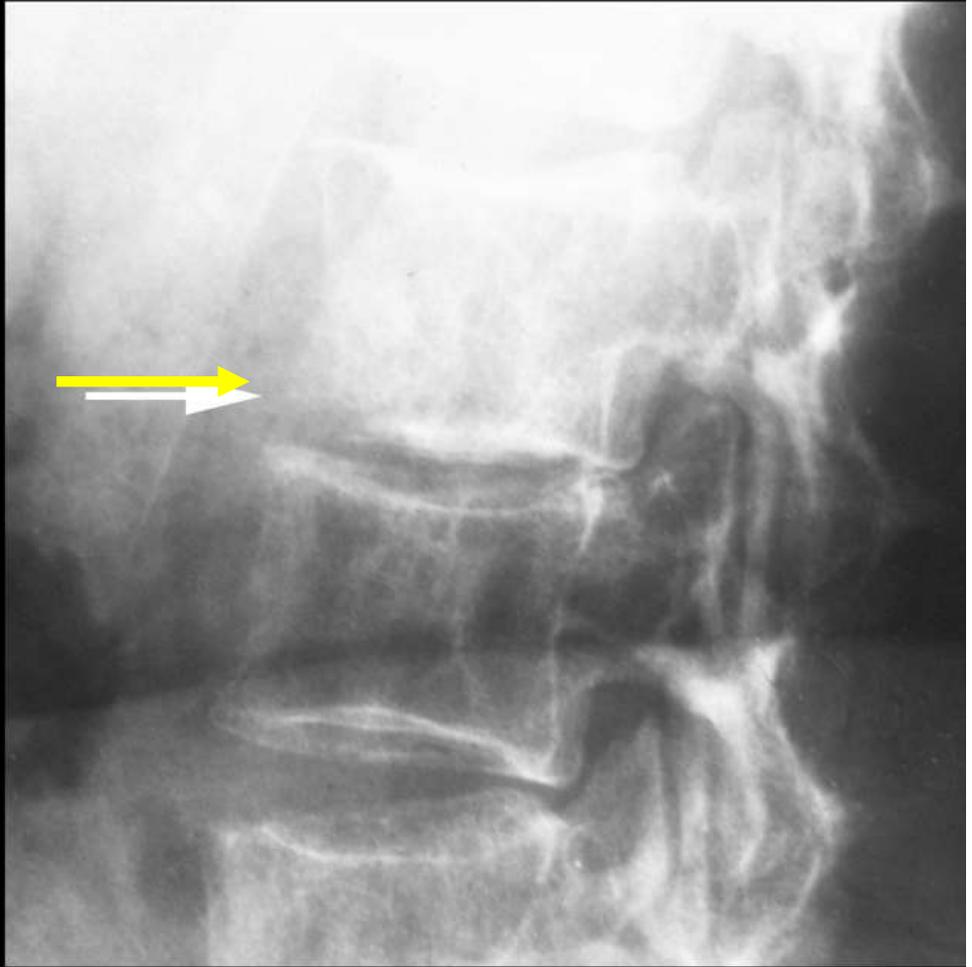
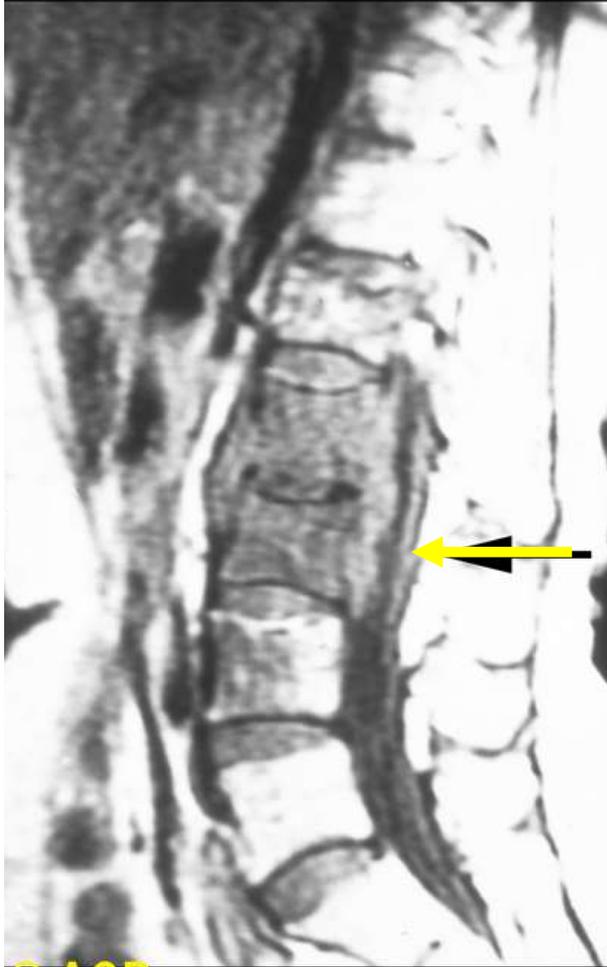
Management

- 3rd-generation β -lactamase-resistant cephalosporin e.g.. Ceftriaxone
- Cefotaxime, ceftizoxime, spectinomycin
- Quinolones
- Concomitant doxycycline

Septic Spondylitis

Definition

- infection of a vertebra.



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Management

- Parenteral antibiotics including β -lactamase-resistant penicillin or first generation cephalosporin
- Vancomycin for MRSA
- Surgical drainage