

# Approach to the Child with Joint Inflammation

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## KEYWORDS

• Pediatric • Approach • Monoarthritis • Polyarthritis

In pediatric practice, physicians are often faced with a child presenting with musculoskeletal complaints. The differential diagnosis of musculoskeletal pain is broad and includes a variety of causes, including arthritis. Arthritis is manifested as a swollen joint or a joint having at least 2 of the following conditions: limited range of motion, pain on movement (stress pain), or warmth overlying the joint. The assessment of a child with arthritis must enable differentiation between acute and chronic causes of arthritis and, particularly, recognition of those who may require urgent medical or surgical intervention. Juvenile idiopathic arthritis (JIA) is only one of the many causes of arthritis. This review covers the evaluation of a child with arthritis of one (mono) or several (poly) joints.

## MONOARTHRTIS

The differential diagnosis of monoarthritis includes entities in the broad categories of infection, postinfection, inflammation, malignancy, and trauma related to a systemic illness (**Table 1**). A carefully conducted history taking and physical examination are the initial and most important steps in narrowing the differential diagnosis and guiding the diagnostic evaluation.

### *History Taking*

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Important aspects to be considered in the history taking are as follows:

1. Characteristics of the pain and/or stiffness (site, number of joints, severity, frequency, duration, pattern, and association of warmth or discoloration). Morning stiffness is a characteristic feature of inflammatory arthritis. Night pain should alert the clinician to a malignancy or an osteoid osteoma
2. Review of systems focused on the presence of fever or other constitutional symptoms (eg, weight loss, anorexia, night sweats, or nocturnal pain)
3. Precipitating factors: traumas, infections (streptococcal, enteric, viral), immunizations, medication exposures, and history of sexual activity

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<b>Table 1</b> <b>Differential diagnosis of monoarthritis</b>	
Infection-related	Septic arthritis Osteomyelitis Transient synovitis Reactive arthritis Lyme disease Tuberculosis
Trauma	Fracture: accidental and nonaccidental Internal derangement: ligament rupture Foreign body: synovitis
Malignancy	Leukemia Neuroblastoma
Inflammation	JIA Inflammatory bowel disease Familial Mediterranean fever
Hemarthrosis	Hemophilia Pigmented villonodular synovitis Synovial hemangioma

4. Travel to Lyme disease–endemic or tuberculosis (TB)–endemic areas or other risk factors for TB (born in Africa, Asia, Latin America, or Eastern Europe; exposure to a person with TB; close contact with a person with a positive TB skin test result)
5. Presence of extra-articular features (diarrhea, urethral discharge, ocular symptoms, rash)
6. Personal or family history of a bleeding diathesis or HLA-B27–associated diseases (inflammatory bowel disease [IBD], acute anterior uveitis, psoriasis, ankylosing spondylitis).

### **Physical Examination**

Abnormalities detected on physical examination are important clues to the diagnosis of monoarthritis. A detailed general physical examination should include growth parameters and vital signs. The presence of fever should alert the clinician to the potential for more severe conditions requiring urgent treatment (eg, septic arthritis). On general examination, clues to underlying diagnosis include rash (psoriasis, viral exanthema), iritis (IBD or enthesitis-related arthritis), and hepatosplenomegaly/lymphadenopathy suggestive of malignancy. The musculoskeletal examination should include a review of all joints and examination of the gait but with a focus on the affected joints. A recently developed and validated tool is the pGALS (pediatric Gait, Arms, Legs, Spine), which is a simple screening examination that can be performed in a few minutes (**Fig. 1**).<sup>1,2</sup>

The focused examination of the affected joint should include inspection of the skin for warmth, redness, swelling, and soft tissue involvement, using the contralateral side for comparison. Importantly, the distinction whether the swelling is of articular or extra-articular (eg, bursitis) origin must be made. Palpation of the surrounding bone is important because the presence of pinpoint bony tenderness is suggestive of fracture, osteomyelitis, or malignancy. Passive and active range of motion should be observed. An exquisite pain in the joint on range of motion or a joint that is severely restricted in its range of motion suggests an etiology other than inflammatory arthritis (eg, septic joint). In the presence of a significant trauma history, stress maneuvers for ligamentous instability should also be performed.

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