

# PGALS: Approach to Child with Arthritis

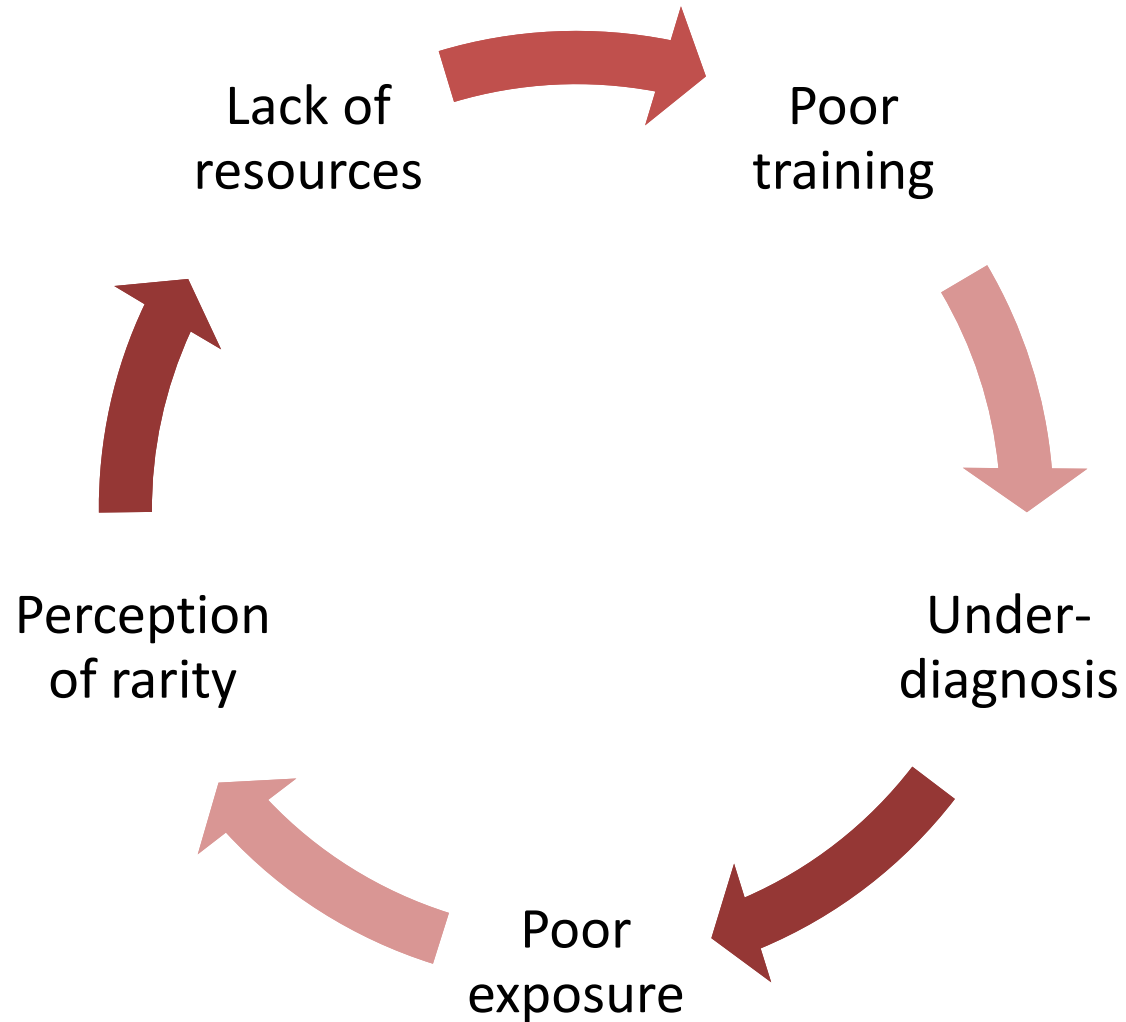


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# Introduction

- In a prospective study from The Royal Hospital for Sick Children, Edinburgh, every 58th child presented with an acute atraumatic limp.
- A survey of adolescents in British Columbia revealed that musculoskeletal complaints were perceived as the 2<sup>nd</sup> most common health concern after acne. Juvenile Arthritis is the most common cause of musculoskeletal disability in children.
- Musculoskeletal pain can be the presenting feature of many different conditions, including life threatening conditions

# Poor training of Paediatricians and GP's in PR



# Case Presentation

- 14 month girl
- Presents with toe walking
- 5 week history



## Differential diagnosis by disease type

### Mechanical

- Soft tissue injury including bruising, strains and foreign body
- Skeletal fracture—including stress/overuse fracture
- Toddler's fracture
- Apophysitis of tibial tuberosity (Osgood-Schlatter disease) or calcaneum (Sever's disease)
- Chondromalacia patellae
- Spondylolisthesis and spondylolysis

### Inflammatory

- Reactive arthritis including transient synovitis of the hip
- Juvenile idiopathic arthritis
- Myositis
- Other connective tissue disease (e.g. systemic vasculitis, systemic lupus)
- Chronic recurrent multifocal osteomyelitis (CRMO)
- Synovitis Acne Pustulosis Hyperostosis Osteitis syndrome (SAPHO)

### Infection

- Skeletal including osteomyelitis and septic arthritis
- Discitis
- Soft tissue infection
- Abdominal sepsis including psoas abscess, appendicitis, peritonitis
- Inguinal lymphadenitis

### Specific hip disorders

- Perthe's disease
- Slipped upper femoral epiphysis
- Idiopathic chondrolysis

### Congenital

- Developmental dysplasia of the hip (DDH)
- Congenital talipes equinovarus (CTEV)
- Congenital short femur
- Skeletal dysplasias
- Multiple hereditary osteochondromata

### Malignant disease

- Leukaemia
- Bone neoplasia (e.g. osteoid osteoma, osteoblastoma and osteosarcoma.)
- Spinal cord tumour
- Langerhan's cell histiocytosis

### Metabolic

- Rickets (A)

### Others

- Neurological and neuromuscular disease
- Haematological disease (e.g. haemophilia, sickle cell disease)
- Tarsal coalitions
- Osteochondritis dissecans (knee, talus, metatarsal)
- Chronic pain syndromes (chronic regional pain syndrome Type I)
- Idiopathic/conversion disorder (usually bizarre gait)

# Age appropriate differential diagnoses

<b>Any age</b>	<b>Trauma Septic arthritis Reactive arthritis Juvenile idiopathic arthritis (JIA) Malignancy</b>
<b>Age 0-4 yrs</b>	<b>Developmental dysplasia of the hip Transient synovitis Non-accidental injury</b>
<b>Age 4-10 yrs</b>	<b>Perthe's Transient synovitis</b>
<b>Age 11-16 yrs</b>	<b>Slipped upper femoral epiphysis (SUFE)</b>

# History

## Onset Pain:

- Sudden (injury, Septic) vs indolent (JIA)

## Disability:

- Severe not common in *early* JIA

## Timing Pain:

- EMS
- Nocturnal Pain
- Bone Pain

## Response to Meds:

- JIA, reactive and Osteoid Osteoma
- Malignancy and septic not

## Intensity Pain:

- JIA not severe
- Enthesitis can be
- Severe septic, malignancy or amplified pain

## Family:

- Psoriasis, Ank spond, crohns , Lupus?

Social, infectious contacts, immunisations, Growth etc



## **RED FLAGS**

**(Raise concern about infection, malignancy or non-accidental injury)**

- Fever, malaise, systemic upset (reduced appetite, weight loss, sweats)
- Bone or joint pain with fever
- Refractory or unremitting pain, persistent night-waking
- Incongruence between history and presentation (such as the pattern of the physical findings and a previous history of neglect)



## SEPSIS

- Complete non-weight bearing
- Any attempt to move the limb causes extreme distress
- Constant severe pain
- Night pain and waking
- Fever
- Immunocompromised child
- due to primary disease or medications



## JUVENILE IDIOPATHIC ARTHRITIS

- Joint swelling lasting > 6 weeks
- Stiffness / slowness in the mornings
- Joint pain may not be verbalised in the very young child and may manifest as being grumpy, clumsy or avoiding activities
- Regression of achieved milestones
- Leg length discrepancy and muscle wasting suggest chronicity (many months)



## RED FLAGS

## MALIGNANCY

- Night pain
- Severe and non-remitting pain
- Pallor, bruising, anaemia, thrombocytopenia
- Lymphadenopathy
- Hepatosplenomegaly
- Systemic symptoms
- lethargy, weight loss, night sweats, fever
- Back pain in the unwell child



## NON ACCIDENTAL INJURY

- Delay in seeking medical attention
- Changeable history inconsistent with pattern of injury or developmental stage of the child
- Repeated presentations
- Un-witnessed injury
- Complete non-weight bearing with occult fracture



# Case Presentation

- 14 month girl
- Presents with toe walking
- Left side only
- 5 week history
  - Timing: initially only in morning
  - Cries often when taken out of bed and refuses to walk ? pain
  - Now most of the time
  - No weight loss, no fever, no systemic features
  - Previously well
  - Development normal
  - Milestones appropriate, walked “normally” from 11-13 months.



# O/E

- First full general and systems based on excluding differential
- Then MSK screen (PGALS)
- If any abnormality: Full joint exam
- Look for features specific suspected autoimmune diseases

REPORTS ON THE RHEUMATIC DISEASES SERIES 5

# *Hands On*

Practical advice on management of rheumatic disease



## **pGALS – A SCREENING EXAMINATION OF THE MUSCULO-SKELETAL SYSTEM IN SCHOOL-AGED CHILDREN**

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Observe the child standing  
(from front, back and sides)

- Posture and habitus
- Skin rashes – e.g. psoriasis
- Deformity – e.g. leg length inequality, leg alignment (valgus, varus at the knee or ankle), scoliosis, joint swelling, muscle wasting, flat feet



Observe the child walking and  
**'Walk on your heels'** and  
**'Walk on your tiptoes'**

- Ankles, subtalar, midtarsal and small joints of feet and toes
- Foot posture (note if presence of normal longitudinal arches of feet when on tiptoes)







'Hold your hands out straight in front of you'

- Forward flexion of shoulders
- Elbow extension
- Wrist extension
- Extension of small joints of fingers



'Turn your hands over and make a fist'

- Wrist supination
- Elbow supination
- Flexion of small joints of fingers



'Pinch your index finger and thumb together'

- Manual dexterity
- Coordination of small joints of index finger and thumb and functional key grip



'Touch the tips of your fingers'

- Manual dexterity
- Coordination of small joints of fingers and thumbs









Squeeze the metacarpophalangeal joints for tenderness

- Metacarpophalangeal joints



**'Put your hands together palm to palm' and 'Put your hands together back to back'**

- Extension of small joints of fingers
- Wrist extension
- Elbow flexion







**'Reach up, "touch the sky"'  
and  
'Look at the ceiling'**

- Elbow extension
- Wrist extension
- Shoulder abduction
- Neck extension



**'Put your hands behind your  
neck'**

- Shoulder abduction
- External rotation of  
shoulders
- Elbow flexion





'Try and touch your shoulder with your ear'

- Cervical spine lateral flexion



**'Open wide and put three (child's own) fingers in your mouth'**

- Temporomandibular joints (and check for deviation of jaw movement)







Feel for effusion at the knee (patella tap, or cross-fluctuation)

- Knee effusion (small effusion may be missed by patella tap alone)



Active movement of knees (flexion and extension) and feel for crepitus

- Knee flexion
- Knee extension





Passive movement of hip  
(knee flexed to 90°, and  
internal rotation of hip)

- Hip flexion and internal rotation



'Bend forwards and touch  
your toes?'

- Forward flexion of  
thoraco-lumbar spine (and  
check for scoliosis)

# Specific Features: Skin



Psoriasis	White scaly plaques
Vasculitis:	
Henoch Schonlein Purpura	Palpable purpura on the lower limbs
Kawasaki Disease	Polymorphous erythematous macules over trunk. Can be variable. Later peeling of the fingers and toes is characteristic.
Behets	Oral or genital ulcers, papulopustular lesions, erythema nodosum
Polyarteritis Nodosa	Variable, erythema multiforme, skin nodules, livedo reticularis
SLE	Malar rash, discoid lupus, vasculitis rash, photosensitivity
sJIA	Salmon patches
Juvenile Dermatomyositis	Heliotrope rash around the eyes, gottrons papules over extensor surfaces, skin ulceration, calcinosis, periungual erythema
Sarcoidosis/Blau's disease	erythematous/tan colored maculopapular rash, Panniculitis
Inflammatory Bowel Disease	Erythema nodosum, pyoderma gangrenosum
Scleroderma	Oedema, sclerosis,

# Eyes

Juvenile Idiopathic Arthritis

- Oligoarthritis
- Psoriatic Arthritis
- RF negative Polyarthritis
- Entesitis Related Arthritis

Paediatric Sarcoidosis/Blau's Disease

Reiters Syndrome

Henoch-Schonlein Purpura

Beçhets Disease

Kawasaki Disease









Approach to Clinical Assessment

Investigation & Management

Limping Child

Pain by Site

Swollen Joint(s)

Resources



## Understand | diagnose | change

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