

# The musculoskeletal system

# SYMPTOMS AND DEFINITIONS

Pain

Site

Determine whether the pain originates from a joint (arthralgia), muscle (myalgia) or other soft.

How many joints are involved? One joint is a monoarthritis; 2–4 joints, oligoarthritis; >4 is polyarthritis.

Are the small or large joints of the arms or legs affected? Different patterns of joint involvement help the differential diagnosis.

Surrounding structures can be painful and include ligaments, tendons, tendon sheaths, bursae, muscle and bone.

## Onset

Pain from traumatic injury is usually immediate and is exacerbated by movement or haemarthrosis (bleeding into the affected joint).

Pain from inflammatory arthritis can develop over 24 hours, or more insidiously.

Crystal arthritis causes acute, sometimes extreme pain which develops quickly, often overnight.

Joint sepsis causes pain that develops over a day or two.

Bone pain is penetrating, deep or boring, and is characteristically worse at night.

Localised pain suggests tumour, osteomyelitis (infection), osteonecrosis or osteoid osteoma (benign bone tumour)

Generalised bony conditions, such as osteomalacia, usually cause diffuse pain.

Muscle pain is often described as 'stiffness' and is poorly localised, deep and aggravated by use of the affected muscle(s). It is associated with muscle weakness in some conditions, e.g. polymyositis, but not in polymyalgia rheumatica. Partial muscle tears are painful; complete rupture may be less so.

## Radiation

Pain from nerve compression radiates to the distribution of that nerve, e.g. lower leg pain in prolapsed intervertebral disc or hand pain in carpal tunnel syndrome.

Neck pain radiates to the shoulder or over the top of the head.

Hip pain is usually felt in the groin, but may radiate to the thigh or knee.

## Alleviating factors/associated symptoms

Pain caused by a mechanical problem is worse on movement and eases with rest.

Pain due to inflammation is worse first thing in the morning and eases with movement.

Pain from a septic joint is present both at rest and with movement.

Patients may present with features of extrarticular disease which they may not connect with musculoskeletal problems

The pattern of the joint condition (a/symmetric, flitting) and extent (mono, oligo or polyarthritis) suggests the diagnosis and directs the history.

Ask about rashes (psoriasis, vasculitis, erythema nodosum) and whether they are photosensitive (systemic lupus erythematosus: SLE).

Weight loss, low grade fever and malaise are associated with rheumatoid arthritis and SLE.

High spiking fevers in the evening with a rash occur in adult onset Still's disease.

Headache, jaw pain on chewing (claudication) and scalp tenderness are features of temporal arteritis.

Connective tissue disease may present with Raynaud's phenomenon, sicca symptoms (dryness of mouth and eyes), rash, mouth ulcers, dysphagia and



## 14.1 Common causes of arthralgia (joint pain)

### Generalised

- Infective
  - Viral, e.g. rubella, parvovirus B19, mumps, hepatitis B, chikungunya
  - Bacterial, e.g. staphylococci, tuberculosis, Borrelia
  - Fungal
- Postinfective
  - Rheumatic fever, reactive arthritis
- Inflammatory
  - Rheumatoid arthritis, systemic lupus erythematosus (SLE), ankylosing spondylitis, systemic sclerosis
- Degenerative
  - Osteoarthritis
- Tumour
  - Primary, e.g. osteosarcoma, chondrosarcoma
  - Metastatic, e.g. from lung, breast, prostate
  - Systemic tumour effects, e.g. hypertrophic pulmonary osteoarthropathy
- Crystal formation
  - Gout, pseudogout
- Trauma, e.g. road traffic accidents
- Others
  - Chronic pain disorders, e.g. fibromyalgia





## 14.5 Causes of muscle pain (myalgia)

### **Infective**

- Viral: Coxsackie, cytomegalovirus, echovirus, dengue
- Bacterial: *Streptococcus pneumoniae*, *Mycoplasma*
- Parasitic: Schistosomiasis, toxoplasmosis

### **Traumatic**

- Tears, haematoma, rhabdomyolysis

### **Inflammatory**

- Polymyalgia rheumatica, myositis, dermatomyositis

### **Drugs**

- e.g. Alcohol withdrawal, statins, triptans

### **Metabolic**

- Hypothyroidism, hyperthyroidism, Addison's disease, vitamin D deficiency

### **Neuropathic**

## General principles

Ask – Look – Feel – Move.

After taking the history, follow a process of observation, palpation and movement.

Examine the overall appearance for pallor, rash, skin tightening and hair changes.

Look at the skin, subcutaneous tissues and bony outline of each area. Before palpating, ask the patient which area is painful or tender.

Feel for warmth, swelling, stability and deformity.

Assess if a deformity is reducible or fixed.

Assess active before passive movement. Do not cause the patient additional pain.

Compare one limb with the opposite side.

Always expose the joint above and below the one in question.

In suspected systemic disease, examine all joints and fully examine all systems. Use standard terminology to describe joint limb positions and movement.

Always describe movements from the neutral position

Commonly used terms are:

flexion: bending at a joint from the neutral position

extension: straightening a joint back to the neutral position

hyperextension: movement beyond the normal neutral position because of a torn ligament or underlying ligamentous laxity, e.g. Ehlers–Danlos syndrome

adduction: movement towards the midline of the body (finger adduction is movement towards the axis of the limb).

The GALS (gait, arms, legs, spine) screen is a rapid screen for musculoskeletal and neurological deficits, and functional ability  
Screening questions

Do you have any pain or stiffness in your muscles, joints or back?

Do you have difficulty dressing yourself?

Do you have difficulty walking up and down stairs? If all three replies are negative, the patient is unlikely to have a significant musculoskeletal problem. If the patient answers positively, carry out a more detailed assessment.



## 14.14 Joint examination

### Look

- Skin
  - Colour
  - Scars
  - Rashes
- Shape
  - Swelling, bony or soft tissues
  - Muscle wasting
- Position
  - Deformity

### Feel

- Soft tissues
  - Swelling: hard, soft, fluctuant
  - Texture: supple, indurated
  - Tenderness
- Skin
  - Temperature
- Bones and joints
  - Tenderness

### Move

- Active movements: what the patient can do
- Passive movements: what you can do to the patient
- Abnormal movements: e.g. increased anterior–posterior movement at the knee due to cruciate ligament rupture