GALS

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- A GALS screen is an examination used by doctors and other healthcare professionals to detect locomotors abnormalities and functional disability relating to gait, arms, legs and the spine

Locomotors Examination

- G gait
- A arms
- L legs
- S spine

Why use GALS?

- To describe a rapid screening examination of the musculoskeletal system - termed the 'GALS' screen
- To overview how abnormal joints are assessed during the physical examination

GALS Screen – Gait, Arms, Legs, Spine

- The GALS screen aims to find out the following:
  - Are any of the joints abnormal?
  - What is the nature of the joint abnormality?
  - What is the extent (distribution) of the joint involvement?
  - Are any other features of diagnostic importance present?

The key questions

- Have you any pain or stiffness in your muscles, joints or back?
- Can you dress yourself completely without any difficulty? (dressing involves all joints)
- Can you walk up and down stairs without any difficulty? (assesses muscle wasting)

Gait

- *observe* patient walking, turning and walking back
- *look for*:
  - smoothness and symmetry of leg, pelvis and arm movements
  - normal stride length
  - ability to turn quickly
- NB: Parkinson an patients have poor arm swing and cannot turn quickly

Arms

- Ask patient to stand in the anatomical position
- Check normal girdle muscle bulk and symmetry
- Check that elbows are straight and in full extension
- Attempt to place both hands behind the head, then push elbows back (look for glen humeral joint disease)
- Examine hands palms down, with fingers straight
- Observe normal suspiration and probation (check for musculoskeletal dysfunction)
- Observe normal grip (reduced grip → arthritis, MG)
- Place tip of each finger on to the tip of the thumb to assess normal dexterity and precision grip
- Squeeze across 2nd to 5th metacarpal (metacarpal 'squeeze' test) - discomfort suggests sinusitis

Legs

- Observe any knee or foot deformity
- Assess flexion of hip and knee, whilst supporting the knee
- Passively internally rotate each hip, in flexion
- Examine each knee for presence of fluid using ‘bulge’ sign and ‘patella tap’ sign
- Squeeze across the metatarsals to detect any synovitis
- Inspect soles of the feet for rashes and/or callosities (common in rheumatoid arthritis)

Spine

- Check par spinal and shoulder girdle muscle bulk and symmetry
- Look at straightness of spine (look for scoliosis)
- Check levels of iliac crest (look for hip pathology)
- Look for abnormal gluteal muscle bulk (look for hip pathology)
- Check for popliteal swellings (behind the knee)
- Check Achilles tendons (look for ethsopathy – diseases of bone attachment)
- Press over mid-point of each supraspinatus and squeeze skinfold over trapezius - tenderness suggests fibromyalgia.
- Note normal spine curvatures when standing, then ask patient to bend forward and assess lumbar and hip flexion – a straight spine and loss of lumbar flexion suggests enclosing spondylitis
- Try to place ear on the shoulder each side - tests lateral cervical flexion.

Joint Abnormality

Active Inflammation

- *Detailed* examination of abnormal joints:
- Inspection
  - Swelling, redness, deformity
- palpation
  - Warmth, Crepitation, tenderness
- movement
  - Active, passive, against resistance
- Function
  - loss of function

Inflammation of joints

- **Arthritis**' refers to definite **inflammation** of a joint(s) i.e. swelling, tenderness, warmth and loss of function of affected joints.
- '**Arthralgia**' refers to **pain** within a joint(s) without demonstrable inflammation by physical examination. Commonly occurs with SLE complaining of pain.
- The main signs of active inflammation include: *swelling*, *warmth*, *erythema*, *tenderness*, and *loss of function* of the joint.

- Site of swelling
- Tissue involved
- Indicative of…
  - articular soft tissue
  - joint synovium or effusion
  - inflammatory joint disease

Inflammation of joints

- Peri-articular soft tissue
- subcutaneous tissue
- inflammatory joint disease
- non-articular synovial
- bursa/tendon sheath
- inflammation of structure
- bony areas
- articular ends of bone
- Osteoarthritis
- **Enthesopathy**: pathology or lesions of enthesis (the site where ligament or tendon inserts into bone) Examples include: *plantar fasciitis, Achilles tendonitis*.
- **Irreversible Joint Damage**

Joint deformity

- malalignment of two articulating bones
- Crepitus
  - audible and palpable sensation resulting from movement of one roughened surface on another
  - classic feature of osteoarthritis e.g. patellofemoral crepitus on flexing the knee
- Loss of joint range or abnormal movement
- **Dislocation**: articulating surfaces are displaced and no longer incontact
- **Subluxation**: partial dislocation
- **Valgus**: lower limb deformity whereby distal part is directed away from the midline e.g. hallux valgus

Joint deformity

- **Varus**: lower limb deformity whereby distal part is directed towards the midline e.g. varus knee with medial compartment OA
- Theses may be consequence of inflammation, degenerative arthritis or trauma:
- Identified by
- Painful restriction of motion in absence of features of inflammation
  - e.g. knee 'locking' due to meniscal tear or bone fragment
- Instability associated with abnormal movement or abnormal range of movement
  - e.g. side-to-side movement of tibia on femur due to ruptured collateral knee ligaments
- A spinal abnormality such as ankylosing spondylitis is a loss of the lordosis of cervical spine and lumbar spine. This pushes the head forwards, and means that a patient with this condition will be unable to look up.

Distribution of Joint Involvement

- Determine number of joints involved:
  - **polyarthritis** > 4 joints involved
  - **oligoarthritis** 2-4 joints involved
  - **monoarthritis** single affected joint
- Note if involvement is symmetrical

- Note the size of the involved joints
- Is there axial involvement?
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- *Bilateral* and *symmetrical* involvement of *large* and *small* joints is typical of rheumatoid arthritis
- Lower limb *asymmetrical* oligoarthritis and *axial* involvement would be typical of reactive arthritis
- Exclusive inflammation of the distal interphalangeal joints of the fingers is highly suggestive of psoriatic arthritis

- The distribution of the polyarthritis is helpful in the differential diagnosis:
- Disease
- Joints involved
- Joints spared
- Rheumatoid arthritis
- PIP, MCP, wrist, elbow, shoulder, cervical spine, hip, knee, ankle, tarsal, MTP
- DIP, thoracic spine
- lumbar spine
- Osteoarthritis
- 1st CMC, DIP, PIP, cervical spine, thoracolumbar spine, hip, knee, 1st MTP, toe IP
- MCP, wrist, elbow, shoulder, ankle, tarsal joints
- Polyarticular gout
- 1st MTP, ankle, knee
- Axial

- Other Diagnostically Important Features
- Rheumatoid nodules: collection of normal cells including lymphocytes, and fibroblasts that surround a center of fibrinoid necrosis
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- Tophi: deposit of crystallised monosodium urate in people with longstanding hyperuricemia
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- Psoriasis: the characteristic skin condition may be present on various areas of the skin – commonly the elbows. In Psoriasis, patients commonly have nail “pitting” and also onycholysis – separation or loosening of part or all of a nail from its bed.
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- Malar rash: red/purple scaly rash.

Thanks again people…