The rheumatological examination

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Abstract

Musculoskeletal (MSK) problems are common and often under-recognized. They cause significant morbidity and are often overlooked, particularly in patients with other co-morbid long-term conditions. Improving skills in the detection of MSK abnormalities can be achieved using a structured approach such as that set out in this article. Improving one's MSK examination and assessment skills will lead to greater confidence in one's diagnosis of MSK problems, and a greater likelihood of optimal patient management and enhanced quality of life.

Keywords Arthritis; education; examination; joints; musculoskeletal

Introduction

Musculoskeletal (MSK) problems are widespread: more than one-third of the population aged over 50 have MSK pain that interferes with normal activities,[1] and 20% of GP consultations result from an MSK problem.[2] Moreover, with an increasingly ageing population, co-morbid MSK problems (primary or secondary) will frequently be present, and will need to be addressed in order to deliver effective patient care and improve patient quality of life. Previous evidence has shown that MSK abnormalities experienced by medical inpatients are underreported.[3]

An MSK examination should therefore always be performed as a part of any general examination, using a quick screening method, followed by a detailed examination if there is any evidence of an abnormality. The MSK examination starts when the patient enters the consultation room. Simple observation can reveal valuable information about patient's gait, postural asymmetry or other significant MSK abnormalities. It is also important to carry out a targeted systems examination, as many MSK conditions such as inflammatory arthritis and autoimmune rheumatic diseases are characterized by multi-system involvement.

The aim of the evaluation should be to identify the MSK abnormalities and the presence of any associated systemic features (e.g. psoriasis). It is also important during rheumatological examination to be familiar with what is normal, as ethnicity, age and gender can lead to wide variation in joint appearance and mobility. The degree of flexibility (i.e. hypermobility in movement of joints) can also influence interpretation of the examination findings.

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The GALS screen

The GALS (Gait, Arms, Legs and Spine) screening is a quick and a sensitive examination tool to detect MSK abnormality.[4] This involves a few simple screening questions and a rapid examination of gait, arms, legs and spine, which involves assessment of joints for normal movements, swelling and any postural abnormalities. The GALS screen has been shown to increase MSK examination skills in medical students.[5] The screening questions are:

- have you any pain or stiffness in your muscles, joints or back?
- can you dress yourself completely without any difficulty?
- can you walk up and down the stairs without any difficulty?

If the patient answers no to all three questions, significant musculoskeletal disease is unlikely.

Screening examination

Gait: observe the patient's walking and look for smoothness, symmetry and any abnormality in the gait. Assess the patient from in front, behind and the side, looking for any loss of muscle bulk, deformities, and asymmetry of the spine, limbs and the extremities (Table 1).

Arms: ask the patient to place the hands behind the head. This movement quickly assesses shoulder abduction, extension and elbow flexion, which are affected first in shoulder problems.

Hands: with the patient's hands stretched out, look for joint swelling, wasting of the hand muscles (intrinsic muscles and thenar/hypothenar eminences) and deformities (e.g. Heberden's nodes in osteoarthritis or swan-neck/boutonnière deformities in rheumatoid arthritis). Ask the patient to make a fist in order to assess grip and movement of the fingers. Squeeze the 2nd and 5th metacarpophalangeal (MCP) joints and assess for any tenderness suggesting inflammatory joint disease. Assess grip strength by asking the patient to squeeze your fingers, and fine precision by asking them to make a pincer grip between their thumb and index fingers.

Legs: with the patient lying on the couch, flex and extend each knee in turn and feel for any crepitus. Slide your hand firmly down the front of each thigh in turn, to push any effusion into the suprapatellar pouch and then test for patellar tap by gently pushing the patella downwards using the fingers of the other hand. Bouncing or tapping of the patella on the lower femur will suggest an effusion in the knee-joint. With each knee flexed in turn, passively rotate each hip to detect pain or restriction of movement during internal and external rotation.

Feet: look for any deformities, callosities, ulcers or joint swelling in the feet and ankles from the end of the bed. Perform the metatarsophalangeal (MTP) squeeze to elicit any tenderness, which may indicate inflammatory arthritis.

Assessment of gait

Type of gait	Abnormality	Pathology
Antalgic gait (limping gait)	Asymmetric gait cycle with short steps on the affected leg — shortening of stance phase	Any lower limb pathology
Trendelenburg gait	Tilting of pelvis downwards on the opposite side during the stance phase	Weakness of abductor muscles (gluteus medius, gluteus minimus)
Myopathic gait (waddling gait)	Broad-based gait with a duck-like waddle in the swing phase	Proximal muscle weakness, pregnancy, muscular dystrophy
High stepping gait (neuropathic gait)	Leg lifted high in swing phase as there is inability to dorsiflex and evert the foot	Peroneal nerve damage

Table 1

Spine: with the patient standing, assess the spinal curves. Normally, you will see a cervical lordosis, mild thoracic kyphosis and a lumbar lordosis. Look for scoliosis or any abnormal kyphosis or lordosis from the back and the side respectively. Assess movement of cervical spine by asking the patient to tilt the head towards the shoulder on the same side. Difficulty in lateral flexion is an early sign of MSK neck problems. Check movement of the lumbar spine by placing your fingers on the lumbar vertebrae and asking the patient to touch their feet.

Document the findings of your examination in a grid with a brief explanation of any abnormality detected (Table 2). If any abnormalities are detected, you should then proceed to a focussed regional examination.

A similar validated Paediatric GALS (pGALS) screening tool provides an easy assessment of any significant MSK problems in children.[6]

Regional examination of the musculoskeletal system

Once an abnormality has been noted in the history and/or GALS examination, a comprehensive examination of the affected limb/joint should be carried out.[7] This examination system is available via the Arthritis Research UK website to download or order in booklet and/or DVD format (http://www.arthritisresearchuk.org/health-professionals-and-students/student-handbook.aspx). The key components of the examination are listed below.

- **Look:** visually inspected the area concerned and compare with the other side. Look for any asymmetry, deformities, muscle wasting, skin changes and any visible scars. Make a note of the pattern of joint involvement (e.g. MCP, DIP, large joint), which may aid diagnosis.

GALS screen recording grid

	Appearance	Movement
Gait		
Arms		
Legs		
Spine		

Notes: A similar validated Paediatric GALS (pGALS) screening tool provides an easy assessment of any significant musculoskeletal problems in children.[6]

Table 2

- **Feel:** with the back of your hand, feel for any temperature change. Palpate the joints to elicit any tenderness or effusion. Assess the peripheral pulses and perform a local neurological examination.
- **Move:** assess the movement of limbs/joints by active and passive movements. Muscle power can be tested by resisted active movements.
- **Functional assessment of the affected limb/joint:** ask the patient to perform certain movements that relate to their daily activities and ascertain how the deformity or the abnormality is affecting the patient.

Identifying any joint deformities, recognizing the pattern of involvement of the affected joints, and a careful examination of the skin and nails should help to clinch the diagnosis (Table 3). Examination of the cardiovascular, respiratory, abdominal and neurological system is essential as many rheumatological conditions are multi-systemic in nature. Examples are shown in Table 3.

Examination of the hand and wrist

Look: place the patient's hands on a pillow, allowing him/her to rest, so as to avoid any pain whilst being examined. With the palms facing down, look for any skin changes (e.g. bruising secondary to corticosteroids, vasculitic skin changes, psoriatic plaques and surgical scars). Look at the nails for any evidence of nail pitting, onycholysis or splinter haemorrhages. Inspect the joints for any swelling, deformities and any associated muscle wasting. Observe for any specific pattern of joint involvement in, for example, the proximal interphalangeal (PIP), distal interphalangeal (DIP) and MCP joints. Ask the patient to turn the hands over so that the palms are facing up. Look for any carpal tunnel operation scar and any thenar/hypothenar wasting.

Feel: feel the peripheral radial pulses and quickly assess median and ulnar nerve sensation by touching the thenar and hypothenar eminence respectively. Feel for any thickened flexor tendons. With the palms facing down, test radial nerve sensation by touching the skin over the thumb and index finger. Assess for any temperature change over joints using the back of your hand. Gently squeeze the MCP joints while watching patient's face for any signs of tenderness or discomfort. Palpate the wrists, MCP, PIP and DIP joints bimanually and look for any signs of synovitis (i.e. fluctuation, tenderness and a feeling of bogginess in the