

# The diagnostic challenge of joint pain—part I

Polyarthralgia is a common presentation in primary care. Because chronic arthritides may present abruptly, they need to be considered in patients who present with acute polyarticular pain. This condition poses a diagnostic challenge because of extensive differential diagnoses. Many classic rheumatological laboratory tests are non-specific and radiographs can be normal or show only non-specific changes early in the disease process. A thorough history and a complete physical examination are essential for accurate diagnosis.

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Arthritis is joint pain with inflammation, whereas arthralgia is joint pain without inflammation (box 1). Diagnosis and management of arthralgia is a challenge. However, early diagnosis and intervention is important, as seen in patients with inflammatory arthritis, in whom the benefits of early treatment may be significant and long-lasting.<sup>1</sup> Information about disease chronology, patient's demographic, pattern of joint involvement, extra-articular

manifestations, and disease course are helpful to elucidate possible causes. Patients with polyarticular pain might need a series of clinic visits to make a specific diagnosis, but a definitive diagnosis may not be possible. Part 1 of this review looks at examining the patient and the clinical features of diseases causing joint pain. Part 2, dealing with further investigations into and management of the condition will be published in the next issue of GM.

due to local injury or inflammation, a mechanical problem, or a systemic illness will direct subsequent evaluation and management.

Polyarthralgia is more common in women and with increasing age. Systemic lupus erythematosus, rheumatoid arthritis, reactive arthritis, and spondyloarthropathies occur more often in younger persons. Osteoarthritis, polymyalgia rheumatica, and giant cell arteritis are more common in older people.<sup>3</sup>

Women are nine times more likely than men to develop systemic lupus erythematosus and three to four times more likely to develop rheumatoid arthritis.<sup>4</sup> This difference becomes less significant after 50 years of age.<sup>5</sup> Women are also nine times more likely to develop fibromyalgia. The distribution between the sexes is more balanced for spondyloarthropathies and vasculitic conditions such as polyarteritis nodosa. Gout usually presents about 20 years after puberty in men and about 20 years after menopause in women. This disease is rare in premenopausal

## Box 1: Definitions

**Polyarthralgia:** pain in more than four joints

**Polyarthritis:** joint inflammation affecting five or more joints. A patient with two to four affected joints have oligoarticular disease

**Monoarthritis:** joint inflammation affecting one joint only. Suspected monoarthritis requires urgent evaluation because of the risk of septic arthritis, gout, or rare bone tumours

## Disease burden and underlying causes

Polyarthralgia is a common presentation in primary care and although the true incidence is unknown, 35% of a large UK community cohort older than 55 years reported pain in more than one joint.<sup>1,2</sup> Many patients with musculoskeletal symptoms have benign self-limited conditions, but polyarthralgia and chronic polyarthritis are leading causes of disability and absence from work. Determining whether the symptom is

**Box 2: Clinical assessment****Take a detailed history**

- Onset, duration, course, and distribution of pain
- Duration of morning stiffness
- Nocturnal pain or pain at rest
- Swelling around the joints
- Recent viral or throat infection
- Systemic features such as fever, weight loss, or fatigue
- Extra-articular manifestations: eye or skin symptoms, bowel, or bladder symptoms
- Family history of connective tissue diseases or rheumatoid arthritis
- Other features—sedentary lifestyle, heavy physical work, lengthy repetitive use of hands, mood changes, altered sleep pattern, or lack of energy, and use of over-the-counter drugs or complementary treatments

**Physical examination**

- Which joints are affected?
- Pattern of joint involvement and symmetry
- Proximal interphalangeal or metacarpophalangeal joint swelling (absence of groove between knuckles on making a fist)
- Range of movement
- Nodules around elbows or shins
- Nodes at distal (Heberden's nodes) or proximal (Bouchard's nodes) interphalangeal joints
- Pitting of nails
- Functional assessment—hand function can be assessed by grip strength and ability to hold objects or write
- Look for risk factors—overweight or previous joint injury might indicate osteoarthritis

woman, unless they have renal insufficiency.<sup>6</sup>

Polymyalgia rheumatica and Wegener's granulomatosis are more likely to affect white individuals.<sup>3</sup> By contrast, sarcoidosis and systemic lupus erythematosus are more common in black people. Familial aggregation occurs in some arthritic diseases, such as spondyloarthropathies, rheumatoid arthritis, and Heberden's nodes of osteoarthritis.<sup>5</sup> Ankylosing spondylitis is strongly associated with the HLA-B27 allele.

**Taking a history**

A systematic approach starts with a careful history and physical examination (box 2). Inadequate history taking and physical examination commonly lead to inappropriate diagnostic testing and treatments. The patient's functional status should be assessed by asking about activities of daily living, which is helpful for assessing disease progression. Details about the character of pain, such as location and quality, its time of onset, and worsening or relieving factors, are important clues.

Pain originating from articular structures usually improves with resting the joint and worsens on moving or weight bearing. Pain that is vaguely localised to a joint but cannot be associated with a specific point of origin may be due to referred pain or to a bone lesion. Bone lesions will often cause unrelenting pain at night.

Ask about early morning stiffness lasting more than 1 hour because it is the key feature suggesting inflammation.<sup>5</sup> Patients with osteoarthritis may

find their joints become less stiff in only 5–10 minutes; however morning stiffness associated with rheumatoid arthritis may last for hours.<sup>7,8</sup> Other features of inflammation include erythema, warmth, and joint swelling. Health-care practitioners should not forget to ask about inflammatory symptoms affecting the back, such as insidious back pain without trauma. Patients with severe joint inflammation or systemic disease also may present with fatigue, weight loss, or fever.<sup>9</sup>

**Examining the patient**

Guided by the patient's history, the physical examination helps to distinguish between mechanical problems, soft-tissue disease, and non-inflammatory and inflammatory joint diseases. A major goal of the examination is to detect warmth over a joint, joint effusion, limitations in range of motion with instability, and pain on joint motion, which are the hallmarks of synovitis.<sup>10</sup>

Palpate multiple joint capsules to look for soft-tissue swelling and effusions resulting in oedema and influx of inflammatory cells into and around the synovium. Soft-tissue swelling should be distinguished from non-inflammatory bony hypertrophy, such as Heberden's and Bouchard's nodes, which often indicate osteoarthritis. Crepitus indicates the presence of irregularities of the articular cartilage, which are most commonly associated with osteoarthritis, injury, or previous inflammation. Findings in the hand can be subtle, so palpating each joint is important.

Although palpation can often identify synovitis, it may not detect inflammation of proximal

joints, for example in elderly patients with polymyalgia rheumatica.<sup>3</sup> Morning stiffness and a history of swelling suggest an inflammatory process but are also characteristic of fibromyalgia, a non-inflammatory condition.<sup>11</sup> Typically, patients with fibromyalgia have a subjective sense of swelling, with pain, myalgia, and tender points but no objective signs of synovitis.<sup>12</sup>

## Clinical features

### Duration

Acute polyarticular joint pain (ie, present for less than 6 weeks) may signal a self-limiting disorder or a harbinger of chronic disease.<sup>13</sup> Although chronic polyarticular arthritides usually develop insidiously, they can present abruptly. Thus, chronic conditions such as rheumatoid arthritis should be considered, at least initially, in patients who present with acute polyarticular pain.<sup>11</sup>

To avoid treating a self-limiting disorder with potentially toxic disease-modifying agents, synovitis should be present for 6 weeks before a diagnosis of rheumatoid arthritis is made.<sup>14</sup> Early gout usually affects one joint only. However, this disease also should be considered in patients with acute polyarticular arthritis, particularly older women on diuretics and who have hypertrophy and degenerative changes of the distal interphalangeal joints (Heberden's nodes) and proximal interphalangeal joints (Bouchard's nodes).<sup>6</sup> Except for *Neisseria gonorrhoeae*, bacterial

infections in joints seldom directly cause polyarthritis.<sup>15</sup>

### Distribution

The pattern of joint involvement provides diagnostic clues (table). For instance, osteoarthritis of the hand usually involves the distal and proximal interphalangeal joints, but not the metacarpophalangeal joints.<sup>16</sup> Alternatively, rheumatoid arthritis of the hand most often involves the proximal interphalangeal and metacarpophalangeal joints, but not the distal interphalangeal joints.<sup>14,16</sup> Psoriatic arthritis, crystal-induced arthritis, and sarcoidosis may affect all these joints.

Spondyloarthropathies typically involve the larger joints of the lower extremities. Osteoarthritis tends to spare wrists, elbows, and ankles, unless the patient has a history of trauma, inflammation, or a metabolic disorder such as haemochromatosis. Axial pain may be a helpful indicator in the evaluation of peripheral joint pain. In addition to peripheral joints, osteoarthritis may involve the lower back, the neck, or both. By contrast, rheumatoid arthritis is seldom an explanation for low back pain.

Axial involvement and enthesitis (inflammation of the muscular or tendinous insertions), such as Achilles tendonitis or plantar fasciitis are common manifestations of spondyloarthropathies.<sup>17</sup> Depending on the underlying cause, the pattern of arthritis may change over time.

### Symmetry

Joint involvement tends to be symmetrical in diseases such as rheumatoid arthritis, systemic lupus erythematosus, polymyalgia

	Course	Distribution	Symmetry	Extra-articular manifestations
<b>Osteoarthritis</b>	Chronic	Large weight-bearing to small joints Lower extremity joints, proximal and distal interphalangeal joints, first carpometacarpal joint Axial involvement—cervical and lumbar	Possible	None
<b>Rheumatoid arthritis</b>	Chronic	Large weight-bearing to small joints Axial involvement—cervical	Yes	Subcutaneous nodules Carpal tunnel syndrome Lungs Eyes
<b>Polymyalgia rheumatica</b>	Chronic with relapse seen during initial 18 months of steroid treatment and within 1 year of stopping treatment	Symmetrical proximal pain Stiffness in shoulders and buttocks Axial involvement—neck	No	Malaise Anorexia Myalgia Fever Night sweats Weight loss Depression Ophthalmic features
<b>Fibromyalgia</b>	Chronic	Diffuse Axial involvement—widespread	Yes	Myalgia Tender points Irritable bowel syndrome
<b>Ankylosing spondylitis</b>	Chronic	Large joints—lower limbs Axial involvement—sacro-iliac area of lower back	Mainly asymmetrical	Iritis Tendonitis Aortic insufficiency
<b>Psoriatic arthritis</b>	Chronic	Large and small joints Axial involvement—possible	Possible	Psoriasis rash Dactylitis with sausage digits Tendonitis Onychodystrophy
<b>Systemic lupus erythematosus</b>	Chronic	Small joints	Yes	Malar rash Oral ulcers, Serositis (pleuritis or pericarditis)
<b>Gout</b>	Chronic but intermittent	Usually affects one joint	No	Gouty tophi Renal complications

**Table:** Features of common causes of polyarthralgia

rheumatica, viral arthritides, and serum sickness reactions. Of eight variables examined in one study, symmetrical pain was the most potent discriminating feature for rheumatoid arthritis.<sup>18</sup> Psoriatic arthritis, reactive arthritis, and gout are more likely to present with asymmetrical peripheral involvement.<sup>4,5,19</sup>

**Extra-articular manifestations**  
Extra-articular manifestations may provide clues to the presence of some rheumatological diseases but, of themselves, are not diagnostic.<sup>13</sup> For example, extra-articular signs and symptoms can point to the probable reason for swollen proximal interphalangeal joints: a malar rash and oral ulcers suggest systemic lupus

erythematosus; proximal muscle weakness suggests polymyositis; and psoriatic skin and nail lesions raise the possibility of psoriatic arthritis.<sup>20,21</sup> Similarly, in a patient with arthritis of the knee, the presence of conjunctivitis, oral ulcers, vesicopustules on the soles, or recent diarrhoea may indicate reactive arthritis.<sup>22,23</sup>

## Key points

- Polyarthralgia is pain in multiple joints
- It is more common in women and with increasing age
- It has a wide range of differential diagnoses and diagnosis is often not straightforward
- A systematic approach with a careful history and physical examination commonly lead to the appropriate diagnosis in about 75% of patients
- Clinical parameters, such as distribution pattern of joint involvement and extra-articular manifestations, are helpful in narrowing the possible causes

## Disease course

If symptoms are present for a few days to a month, and resolve completely before presenting again, then crystal-induced arthritis (eg, gout, pseudogout) is the probable diagnosis. Arthrocentesis should be considered during a symptomatic flare.<sup>6,19</sup> If synovial fluid analysis fails to identify crystals, palindromic rheumatism should be considered; this condition may progress to rheumatoid arthritis.

Migratory arthritis is characterised by rapid onset of swelling in one or two joints, with resolution over a few days. As the symptoms resolve, similar symptoms emerge in another joint, usually in an asymmetrical location.<sup>4,24</sup> This symptom pattern can occur in bacterial endocarditis, sarcoidosis, systemic lupus erythematosus, gonococcal arthritis, rheumatic fever, Lyme disease, and Whipple's disease.<sup>25</sup>

**Part 2 of this review will be published in the next issue of GM.**

**I have no conflict of interest.**

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