PAIN IN THE HAND AND WRIST

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General considerations

Causes of pain in hand and wrist

At all ages

Trauma
Flexor tenosynovitis
Trigger finger or thumb
Carpal tunnel syndrome
De Quervain's tenosynovitis
Ganglion
Dorsal tenosynovitis
Inflammatory arthritis
Raynaud's syndrome
Reflex sympathetic dystrophy
Chronic upper limb pain

Elderly patients

Nodal osteoarthritis:
Distal interphalangeal
First carpometacarpal
Proximal interphalangeal
Scaphoid fracture
Pseudogout
Gout:
Acute
Chronic tophaceous
Dupuytren's contracture
Diabetic stiff hand

Patients presenting with pain in the hand are often anxious. The hands are so important for daily activities and for communication and contact that any actual or perceived threat to their normal function is worrying. For those whose livings are made by intricate use of their hands—musicians, craft workers, keyboard operators—and for heavy labourers, the threat is often greater. More often than not, people can live with their present pain if their fear of future loss of function can be allayed.

Nature of pain

Localised or diffuse
Unilateral or bilateral
Aching or sharp
Present only with use
Present constantly
Worse at night or at rest
Associated with sensory symptoms

Assessment

Patients' descriptions of their pain are important. Its quality, localisation, variability with rest or use, and the presence of any associated symptoms such as numbness or pins and needles will often be diagnostic. Trauma, sometimes unnoticed, is the most common cause of hand pain. Specific diagnoses vary slightly with age.

Injection technique

Hand and arm well supported
Equipment readily to hand
Clean skin thoroughly
Use small bore needle
Inject small volume of local anaesthetic
Inject corticosteroid through same needle
Always inject under low pressure

Pain in the hand and wrist may reflect a problem arising proximally; the rest of the arm and the neck should always be examined, as should the other hand. Severe pain in the hand may seem to spread up the arm to the axilla or neck. Neck pain on the same side may be primary or reflect muscle spasm, resulting from holding the arm immobile in order to protect it. Several systemic disorders—most commonly inflammatory arthritis—may present as hand pain, usually bilateral, and a full locomotor and general examination is necessary.

Treatment

Physiotherapy helps some patients, but locally applied gels of non-steroidal anti-inflammatory drugs are of only limited value. Oral non-steroidal anti-inflammatory drugs should be used with care when the problem is localised because the risk of side effects may outweigh the severity of the problem and the potential benefit.

Skin depigmentation caused by superficial injection of depot corticosteroid.

Problems may resolve spontaneously, but the main treatment for many patients is a local injection—local anaesthetics not containing adrenaline followed by 0.2–1 ml of a suitable corticosteroid preparation, such as hydrocortisone acetate 25 mg/ml and triamcinolone hexacetonide 20 mg/ml (which is about five times as powerful as hydrocortisone on a mg/ml basis). Patients should be warned that the pain often increases for a day or so after injection. There may be some leakage of the corticosteroid back along the needle track when the injection site is superficial. This may cause local depigmentation of skin and atrophy of subcutaneous fat. This risk is considerably increased when depot corticosteroid preparations are used.

Tendon problems

Flexor tenosynovitis.

Flexor tenosynovitis

Inflammation of tendon sheaths in the hand causes stiffness and pain of one or more fingers, usually worse in the morning. Thickening of the affected tendon sheaths in the palm is diagnostic. Swelling may be mainly just proximal to the wrist or over the proximal phalanges and into the palm. Typically the affected finger cannot be fully extended, and active flexion is more limited than passive flexion.

Treatment—If, after a brief period of rest, treatment is still indicated patients should be given a local injection from the palmar approach along the line of the tendon. Under local anaesthesia, corticosteroid (10–20 mg hydrocortisone or 5–10 mg triamcinolone in more severe cases or if hydrocortisone fails) is injected into the tendon sheath or adjacent to it, under low pressure to ensure that it is not being injected into the tendon itself.

Trigger finger or thumb

The development of tendon nodules is common with rheumatoid arthritis and is a complication of diabetes mellitus, but it can occur spontaneously. The nodule can be palpated and moves with the flexor tendon. It causes local pain or triggering—the finger becomes fixed in flexion because of the nodule jamming on the proximal side of a pulley and has to be flicked straight. Rarely, irreversible flexion may develop.

Treatment—A local injection of corticosteroid is the treatment of choice; it should be injected into the region of the nodule under low pressure (not into the nodule itself). The technique is the same as for flexor tenosynovitis.

De Quervain's tenosynovitis

This problem is related to use. It causes pain around or just proximal or distal to the radial styloid at the point where the abductor pollicis longus tendon runs over the radial styloid and under the extensor retinaculum. There is local tenderness and swelling; the pain can be reproduced by forced flexion of the thumb into the palm or by active abduction of the thumb against resistance. In elderly patients it is distinguished from osteoarthritis of the first carpometacarpal joint by the more proximal site of the pain.

Treatment—A resting splint that immobilises the thumb may help, but the quickest treatment is to inject 25 mg hydrocortisone or 10 mg triamcinolone. Under local anaesthesia, the needle is inserted along the line of the tendon, just proximal or distal to the styloid, at the site of maximum tenderness. Injection under low pressure beside the tendon will produce palpable swelling of the tendon sheath.

Dorsal tenosynovitis

Inflammation of the extensor tendon sheath generally reflects an underlying inflammatory arthritis. The swelling bulges to either side of the extensor retinaculum of the wrist to produce an hourglass swelling. Treatment is by injection of corticosteroid.

Ganglion

This is a bulge or tear of the synovial lining of a joint or tendon sheath and is filled with gelatinous fluid. It occurs around the wrist and is non-inflammatory and generally painless. The swelling is firm or occasionally fluctuant. Ganglia usually resolve spontaneously (though they tend to recur) but occasionally require aspiration with a wide bore needle. Rarely, surgical excision may be necessary.

Dupuytren's contracture

This is a painless thickening of the palmar aponeurosis that produces gradual flexion, initially of the little and ring fingers. The overlying skin is puckered and, unlike flexor tenosynovitis, does not move when the finger is flexed. If the fixed flexion is disabling, excision by a specialist is advisable, but the results may not be satisfactory and may be only temporary.

Injection technique for treating flexor tenosynovitis or trigger finger.

Injection technique for treating De Quervain's tenosynovitis.

Carpal tunnel syndrome

Injection technique for treating carpal tunnel syndrome.

This is the commonest cause of hand pain at night. It is caused by flexor tenosynovitis, premenstrual retention of fluid, or the later stages of pregnancy. It is also common with rheumatoid arthritis and may be the presenting feature. It causes any combination of pain, numbness, pins and needles, and a sense of swelling. The symptoms are brought on by daytime use of the hand in some patients. It is characterised by the median nerve distribution of the symptoms—the pins and needles are sharply localised to the radial three and a half digits—but if the pain is severe it may be difficult for patients to localise the symptoms. Such patients may need an outline drawing of the hand to mark out their night time distribution of pins and needles. A wrist splint worn at night will often relieve pain and pins and needles and, if so, is diagnostic. Nerve conduction studies are useful to confirm the diagnosis if it is uncertain and to determine the severity of the nerve damage. A negative test does not absolutely rule out the syndrome but calls it into question.

Treatment

In milder cases a splint worn at night for a few weeks is curative. Weight loss may help, but diuretics do not. If the symptoms are not relieved but do not justify surgery a local injection of corticosteroid is usually helpful. If symptoms persist surgical decompression should be performed without delay to prevent persistent numbness and wasting of the thenar muscles.

Injecting the carpal tunnel—The hand is placed comfortably palm up, and a fine needle is inserted into the proximal palmar crease just to the ulnar side of the palmaris longus tendon or about 5 mm to the ulnar side of the tendon of the flexor carpi radialis. The needle is inserted at an angle of 45° to the skin and aimed towards the palm. Under local anaesthesia the needle is advanced gently. If the needle is in the nerve initial injection will cause immediate pain in the fingers, showing that the needle must be repositioned. Once the needle is correctly sited corticosteroid is injected slowly (initially 25 mg hydrocortisone or, if this fails, 10-20 mg triamcinolone). The symptoms may be induced briefly towards the end of the injection, and the patient should wear a resting splint for the next few days.

Nodal osteoarthritis

Nodal osteoarthritis with Heberden's nodes.

Nodal osteoarthritis with Bouchard's nodes.

Nodal osteoarthritis may develop painlessly or with an initial acute phase that produces local pain, swelling, and redness. The latter may cause confusion and lead to misdiagnosis as rheumatoid arthritis. Nodal osteoarthritis is uncommon before the age of 45, and there is often a family history of the condition. Once the acute phase has settled (usually in a few weeks or months) the pain and redness subside, but bony swellings remain. These swellings are called Heberden's nodes when the distal interphalangeal joints are affected and Bouchard's nodes when the proximal interphalangeal joints are affected. Nodal osteoarthritis may coexist with other hand problems. Reassurance that the pain will settle and that function is little affected in the long term is usually sufficient treatment. Although the effects of nodal osteoarthritis are unsightly, surgery is not recommended.

First carpometacarpal osteoarthritis may present with acute pain and swelling at the base of the thumb. The joint is tender, and there may be crepitus. During this acute phase an injection of 10 mg hydrocortisone into the joint may help, as may immobilisation in a splint. Usually the pain settles spontaneously, leaving a prominent stiff joint and an adducted thumb—the square hand of osteoarthritis. Only occasionally is surgery necessary.

Systemic disorders causing hand pain

Chondrocalcinosis in wrist.

Cyanosis seen in Raynaud's phenomenon.

Positive prayer sign of diabetic stiff hand.

Diabetic sclerodactyly.

Inflammatory arthritis

The hand is a common site for the first signs of rheumatoid arthritis or of an inflammatory arthritis associated with psoriasis (it is less commonly affected by ankylosing spondylitis or reactive arthritis). The pattern of involvement is usually characteristic; symmetrical involvement of the proximal interphalangeal and metacarpophalangeal joints suggests rheumatoid arthritis, while dactylitis (synovitis of the joint and tendon sheath, with or without cutaneous psoriasis) is often associated with psoriasis or other causes of a seronegative arthritis. An acute onset of nodal osteoarthritis can mimic these symptoms, but osteoarthritis can coexist with an inflammatory arthritis.

Crystal synovitis of the wrist

Acute pseudogout—An acutely inflamed wrist in an elderly patient is occasionally due to synovitis induced by calcium pyrophosphate crystals. Chondrocalcinosis can be seen in radiographs, usually on the ulnar side of the wrist. Chondrocalcinosis increases in prevalence with age and is generally asymptomatic, but it can be the diagnostic feature of this acutely painful inflammatory arthritis. Although technically difficult, aspiration of joint fluid from the wrist reveals turbid fluid containing calcium pyrophosphate crystals, which are weakly positively birefringent. A short course of non-steroidal anti-inflammatory drugs will control the symptoms. Frequent attacks require regular rather than intermittent treatment with such drugs.

Acute gout—Sodium urate crystals can induce synovitis of the wrist or finger joints, particularly in elderly patients who are taking diuretics or who have been admitted to hospital. In such cases the gout may be polyarticular. The symptoms may closely mimic those of acute rheumatoid arthritis. Fluid from the affected joint contains crystals of sodium urate that are strongly negatively birefringent, and the serum urate concentration is usually raised. An acute attack should be treated with non-steroidal anti-inflammatory drugs or, if these are contraindicated, with colchicine (1 mg immediately and then 0.5 mg every six to eight hours). Chronic tophaceous gout is relatively painless but may produce severe deformity of the hand. Allopurinol should never be used to treat an acute attack but may be needed if attacks are frequent or when tophi are present.

Raynaud's phenomenon

This is an undue vasospastic response of the digital artery to cold. The fingers develop pallor followed by cyanosis and then by painful redness due to rebound hyperaemia—the triphasic response. This is a primary and harmless problem in young women in their teens or early 20s. A secondary form, usually coming on later in life, may be a manifestation of rheumatoid arthritis, systemic lupus erythematosus, or scleroderma. It also occurs as an industrial disease in people who use vibrating tools. Avoidance of cold is usually sufficient treatment, but occasionally vasodilator drugs are necessary.

Diabetic stiff hand

Diabetic patients may develop a stiff, painful hand and the so called positive prayer sign. Diabetic sclerodactyly produces tight, shiny skin. Its cause is unknown, but it is commoner in poorly controlled diabetes and may be a marker of vascular complications of diabetes. Other problems that may contribute to stiffness of hands include flexor tenosynovitis, Dupuytren's contracture, and nodal osteoarthritis.

An overlooked scaphoid fracture is a common cause of litigation

Scaphoid bone fracture

This is caused by a fall onto an outstretched arm with the wrist in extension. There is moderate pain, swelling, and tenderness in the anatomical snuff box at the base of the thumb. Initial symptoms are mild, and the injury may be disregarded as a simple sprain. Diagnosis can usually be made from an x ray picture, but special scaphoid views should be taken if there is doubt. As the fracture may be visible on radiographs only after four to six weeks, a bone scan may be necessary.

Treatment—If a fracture is present or suspected the wrist should be immobilised for six to eight weeks; first in a plaster cast enclosing the elbow and thumb (to prevent pronation and supination) for four to six weeks, after which the elbow can be freed. Prolonged immobilisation is the only effective treatment and prevents disunion and the formation of a false joint between the two bone fragments. This causes pain that mimics that of first carpometacarpal osteoarthritis but requires surgical intervention.

Sudeck's atrophy of right hand.

Reflex sympathetic dystrophy (Sudeck's atrophy)

This condition may follow trauma, surgery, or a stroke. The cause is unknown. In the arm the hand and wrist are most commonly affected. Patients develop burning pain, hyperaesthesia, stiffness, and puffiness in the affected part. The skin becomes reddened, smooth, and glossy, and there is increased sweating. Radiographs show patchy osteoporosis of the hand.

Treatment—Most patients recover spontaneously but will do so more quickly if they are given adequate pain relief and are encouraged to move the affected hand despite the pain. Severe cases should be referred to a specialist pain centre. About half of patients are helped by a guanethidine block of the affected limb.

Characteristics of chronic upper limb pain syndrome

Often starts in hand or wrist
May spread to forearm or arm
Few physical signs but exclude epicondylitis, ganglion, tenosynovitis, etc
Often associated with:
Repetitive use of keyboard
Sudden change in work practices
Disharmony at work
Anxiety and sleeplessness
Best regarded as having both physical and psychosocial causes
Best dealt with non-judgmentally

Chronic (work related) upper limb pain syndrome

This is the preferred name for repetitive strain injury, "teno," and associated disorders in which the predominant symptom is pain in all or part of one or both arms with no easily discernible cause. The problem is often work related and has achieved a degree of notoriety because of the severity of the symptoms with few physical signs. People are often severely distressed, and there may be obvious disharmony at their place of work. The syndrome is particularly prevalent among people who work for long periods without breaks at repetitive keyboard jobs. Musicians may have similar problems and can be greatly helped by expert advice on their playing technique. The pathology is unclear, but increased muscle tension, heightened awareness of normal or increased sensory nerve input, and anxiety driven introspection are all possible contributing factors.

Treatment—It is helpful to be objective and non-judgmental, discussing the cause of the problem as a combination of physical and psychosocial factors without assuming which is primary. A substantial reduction in use of the arm for a defined period, a gradual return to work, and the help of a sympathetic but firm physiotherapist will usually resolve the problem. Patients' employers should be encouraged to review the content of their job and the layout of the work place and to be positive and sympathetic. This will help their employees and reduce the risk of litigation.

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