EASILY MISSED?

Joint hypermobility syndrome

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This is one of a series of occasional articles highlighting conditions that may be more common than many doctors realise or may be missed at first presentation. The series advisers are Anthony Harnden, university lecturer in general practice, Department of Primary Health Care, University of Oxford, and Richard Lehman, general practitioner, Banbury. To suggest a topic for this series, please email us at easilymissed@bmj.com.

Joint hypermobility syndrome (JHS), previously known as benign joint hypermobility syndrome (BJHS), is a heritable disorder of connective tissue that comprises symptomatic hypermobility predisposing to arthralgia, soft tissue injury, and joint instability.[1] It is indistinguishable from the hypermobility type of Ehlers-Danlos syndrome.[2] Complications may include autonomic dysfunction, proprioceptive impairment, premature osteoarthritis, intestinal dysmotility, and laxity in other tissues causing hernias or uterine or rectal prolapse. Symptoms are often minimal or mild, but 168 out of 700 patients with joint hypermobility syndrome (24%) attending the UCH Hypermobility Clinic already had an established chronic pain syndrome at the time of their first outpatient attendance. These patients were experiencing serious pain, disability, and impairment of the quality of life, some patients becoming chairbound or even bedbound.[3]

Why is it missed?

In a recent survey among members of the Hypermobility Syndrome Association (a patient self help group), largely due to missed diagnosis, 52% of 251 patients waited over 10 years from the onset of symptoms to get a correct diagnosis.[11]

Doctors may be unaware of the prevalence of the condition, its effect on quality of life, or its multisystemic nature (box 2) and may not routinely look for hypermobility in the clinical examination, especially as the condition rarely forms part of the curriculum in medical schools or in postgraduate training programmes for general practitioners, specialists, or physiotherapists or occupational therapists.[12] The erroneous view that hypermobility is a variant of normality, rather than part of an inherited connective tissue disorder, is also still widely held. In a survey of 319 UK consultant rheumatologists, only 9% of respondents believed that joint hypermobil-

CASE SCENARIO

A 30 year old project manager, who is new to your general practice, presents with right anterior knee pain after slipping and landing on his knee three months ago. Imaging shows no abnormality, but he describes a long history of recurrent shoulder subluxation, and many soft tissue problems and joint pains, often after similarly trivial trauma, and he states that imaging and blood tests "for arthritis" have always been normal. You note that he has no signs of inflammation but that he is hypermobile according to the Beighton score (see box 1), and looking up the Brighton criteria, which includes and extends the older Beighton score (see box 2), you mention he fulfils the criteria for joint hypermobility syndrome, and he expresses relief there is an explanation for his symptoms.

Box 1 | Nine-point Beighton score for joint hypermobility syndrome[4]

One point is gained for each side of the body for the first four manoeuvres listed below, such that the hypermobility score is a maximum of 9 if all are positive.

Passive dorsiflexion of the fifth metacarpophalangeal joint to ≥90° (1 point for left; 1 point for right) (fig 1A)

Opposition of the thumb to the volar aspect of the ipsilateral forearm (1 point for left; 1 point for right) (fig 1B)

Hyperextension of the elbow to ≥10° (1 point for left; 1 point for right) (fig 1C)

Hyperextension of the knee to ≥10° (1 point for left; 1 point for right) (fig 1D)

Placing of hands flat on the floor without bending the knees (1 point) (fig 1E)

Box 2 | 1998 Brighton criteria for classification of joint hypermobility syndrome*[6]

Joint hypermobility syndrome is diagnosed in the presence of two major criteria; one major criterion plus two minor criteria; or four minor criteria. Two minor criteria will suffice where there is an unequivocally affected first degree relative.

The syndrome is excluded by the presence of Marfan's or Ehlers-Danlos syndromes (other than the hypermobility type of Ehlers-Danlos syndrome) as defined by the Ghent 1996[7] and Villefranche 1998[8] criteria respectively.

Major criteria

- Beighton score of ≥4 (either currently or previously)
- Arthralgia for longer than three months in four or more joints

Minor criteria

- Beighton score of 1, 2, or 3 (0, 1, 2, or 3 if aged >50 years)
- Arthralgia in one to three joints or back pain or spondylosis, spondylolysis and/or spondylolisthesis
- Dislocation in more than one joint or in one joint on more than one occasion
- Three or more soft tissue lesions (eg, epicondylitis, tenosynovitis, bursitis)
- Marfanoid habitus (tall, slim, ratio of span to height greater than 1.03 and/or ratio of upper segment to lower segment less than 0.89, arachnodactyly)
- Abnormal skin: striae, hyperextensibility, thin skin, papyraceous scarring
- Eye signs: drooping eyelids, myopia, or antimongoloid slant
- Varicose veins, hernia, or uterine or rectal prolapse

*Although originally designed for use as a research tool in defining a cohort of patients for recruitment into clinical studies, in practice the criteria have proved to be a useful diagnostic aid in the clinical setting.

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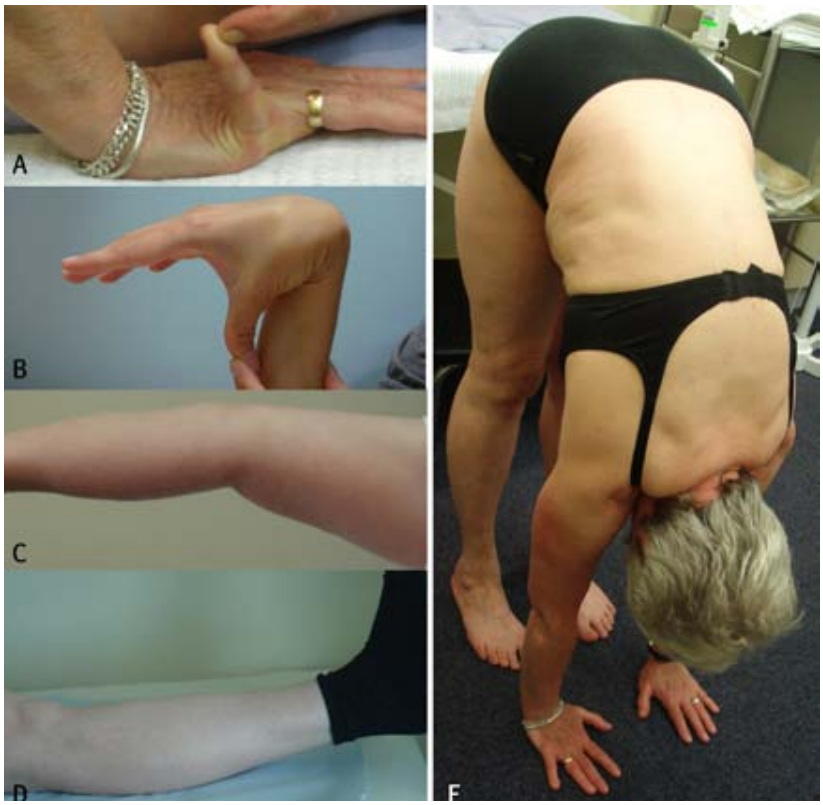
- Febrile neutropenia (*BMJ* 2010;341:c6981)
- Infective endocarditis (*BMJ* 2010;341:c6596)
- Septic arthritis in children (*BMJ* 2010;341:c4407)
- Human brucellosis (*BMJ* 2010;341:c4545)



Patients illustrate the application of the nine point Beighton hypermobility score.[5] Adapted with permission from Springer Science+Business Media

Box 3 | Common clues suggesting joint hypermobility syndrome (based on observations, expert opinion, and case series)

In children and adolescents

- Coincidental congenital dislocation of the hip[18]
- Late walking, with bottom shuffling instead of crawling[19]
- Recurrent ankle sprains[20]
- Poor ball catching and handwriting skills[21]
- Tiring easily compared with peers
- So called growing pains or chronic widespread pain[21]
- Joint dislocations[22]

In adults

- Non-inflammatory joint or spinal pain[23]
- Joint dislocations[22]
- Multiple soft tissue (including sporting) injuries[24]
- Increase in pain or progressive intensification of pain that is largely unresponsive to analgesics[5]
- Progressive loss of mobility owing to pain or kinesiophobia (pain avoidance through movement avoidance)[5]
- Premature osteoarthritis[25]
- Autonomic dysfunction, such as orthostatic intolerance (dizziness or faintness) or postural tachycardia syndrome (in this form of dysautonomia, in 60° upright tilt the blood pressure remains constant while the pulse rate rises by a minimum of 30 beats/min)
- Functional gastrointestinal disorders (sluggish bowel, bloating, rectal evacuatory dysfunction)[26]
- Laxity in other supporting tissues—for example, hernias, varicose veins, or uterine or rectal prolapse[27]

HOW COMMON IS IT?

Joint hypermobility is very common, occurring in 10-20% of populations of Western countries, and higher still in those in Indian, Chinese, and Middle Eastern groups. It is important to distinguish between joint hypermobility and joint hypermobility syndrome. People who are hypermobile without symptoms are merely people with hypermobility. Those with symptoms attributable to their hypermobility may have joint hypermobility syndrome if they conform to the Brighton criteria. The true prevalence of the syndrome is unknown. In surveys in London and in Santiago, Chile, routine searches in consecutive patients referred to general rheumatology clinics have found prevalences of joint hypermobility syndrome (as defined by the Brighton criteria) as high as 45%; the syndrome is higher in females and non-white people.[9 10] Therefore many patients presenting to their doctors with common, everyday, noninflammatory, painful, musculoskeletal conditions probably have unrecognised joint hypermobility syndrome.

ity syndrome and the hypermobility type of Ehlers-Danlos syndrome were the same condition. Furthermore, 46% of respondents were sceptical about a serious impact on people's lives and 72% about a serious contribution to the overall burden of rheumatic disease.[13]

Why does this matter?

If joint hypermobility syndrome is missed, the following problems may arise:

- Inappropriate and potentially harmful labelling or treatments may be applied on the basis of an erroneous diagnosis such as rheumatoid arthritis, hypochondriasis, or somatisation.
- Over zealous physical manipulation may cause avoidable damage, such as *(a)* precipitating subluxation or dislocation of intervertebral or peripheral joints, *(b)* inflicting rupture on ligaments, joint capsules, muscles, or tendons, or *(c)* precipitating pathological fractures in fragile bone. Exercise therapy may be either excessively forceful or ineffectual.[14]
- Anecdotal evidence exists that orthopaedic operations may be done without the surgeon knowing that the patient has an underlying connective tissue disorder, and this may lead to poorer outcomes.
- Chronic pain may sometimes lead to a potentially reversible downward spiral of immobility, deconditioning, dependency, and despair.[5] Out of 700 patients with joint hypermobility syndrome (24%) attending the UCH Hypermobility Clinic, 168 were experiencing serious pain, disability, and impairment of the quality of life, some patients becoming chairbound or even bedbound.[3]

How is it diagnosed?

Diagnosis is entirely clinical as currently no biological or imaging markers are available. The musculoskeletal symptoms mainly derive from a vulnerability to injury resulting from fragile collagenous tissues (tendon, ligament, muscle, bone, cartilage, and skin). In patients with arthralgia or post-injury musculoskeletal pain, screening blood tests and/or appropriate imaging are needed to exclude conditions such as inflammatory arthritis and fractures. Box 3 lists important common clues to joint hypermobility syndrome. The Beighton score (box 1) identifies joint hypermobility but is too insensitive an instrument for diagnosing joint hypermobility syndrome and is not intended for this purpose. Diagnosis requires the application of the 1998 Brighton criteria into which the Beighton score has been incorporated (box 2).[6]

The reproducibility and reliability of the Beighton score and the Brighton criteria have recently been scrutinised,[15-17] and an international panel is currently reviewing the Brighton criteria.[17]

How is it managed?

The key players are the family doctor and a suitably trained physiotherapist.

Doctor's role

- To establish an accurate diagnosis of joint hypermobility syndrome while being alert to the possibility of one of the rarer and more serious heritable disorders of connective tissue, such as Marfan's syndrome, or other forms of Ehlers-Danlos syndrome, such as vascular, or classical. A positive family history of sudden early death from aortic aneurysmal dissection and/or rupture should suggest the possibility of Marfan's syndrome, and a history of major spontaneous arterial rupture or uterine rupture in childbirth should raise suspicions of the vascular type of Ehlers-Danlos syndrome.
- To make a detailed assessment of the effects of the disorder on musculoskeletal function, systemic involvement (such as dysautonomia, gastrointestinal dysmotility), declining mobility, and quality of life.

Physiotherapist's role

- To adapt physiotherapy principles to the needs of patients with lax and fragile tissues. This involves:
  - -Core and joint stabilising and proprioception enhancing exercises
  - -General fitness training to offset or reverse the tendency for the body to lose condition
  - -The use of mobilising techniques to restore natural hypermobility to joints or spinal segments where these have been lost as a result of deconditioning and kinesiophobia.[28]

A before and after comparison study in 18 patients from Glasgow with joint hypermobility syndrome has shown that a home based programme of specific exercises may improve proprioception, symptoms, and quality of life.[29]

For patients with chronic pain for which analgesics are largely ineffective, a pain management programme based on cognitive behavioural techniques and delivered by a specially trained pain psychologist may reduce pain catastrophising, anxiety, and interference of pain with daily life.[30]

For patients with foot or hand problems, refer to a podiatrist for a mechanical foot assessment and tailor made orthotics[31] or to an occupational therapist for help with writing and other work related hand problems.

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