FIBROMYALGIA
Diagnosis and Management

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Abstract:
Background: Fibromyalgia is a common chronic musculoskeletal pain syndrome, however its characteristics, diagnosis and management have not always been well understood. There is now increasing understanding of the pathophysiological mechanisms of fibromyalgia and development of more effective management strategies.
Objective: To explain the characteristics and diagnostic features of fibromyalgia. A discussion of current management strategies is included.
Discussion: Fibromyalgia patients have a central pain system problem that results in widespread musculoskeletal pain, and many other disabling features in the absence of tissue damage. The ability to exclude other pathology and recognize the disorder is important, as there are very real management options available. Management is most effective as a multidisciplinary, layered approach. It is important to involve the patient in their own treatment program, to enhance its success.

Key Words: Fibromyalgia, diagnosis, management.

INTRODUCTION

Fibromyalgia is a common condition characterised by chronic, widespread musculoskeletal pain and tenderness in the absence of tissue damage. It affects between 3-5% of the population in industrialised nations and results in significant burden on the health systems of those countries, as well as large amounts of lost employment time and a significant number of compensation claims[1,2].

In general, fibromyalgia has been poorly understood by the health care industry and at best, management has been unclear and often ineffectual. Recently, there has been an increase in our knowledge of the pathophysiological mechanisms behind the clinical presentation of fibromyalgia and this has led to better management strategies. This has resulted in an improvement in quality of life for those with fibromyalgia and an increased sense that there are indeed effective therapeutic strategies to deal with the disorder.

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AETIOLOGY

The clinical features of fibromyalgia result from dysfunction of the pain-related components of the nervous system. This results in increased sensitivity of pain-related nerves to the degree that otherwise innocuous stimuli will result in pain[3-5]. This process of sensitisation has its origins in the spinal cord and central nervous system but the clinical effects are in the musculoskeletal system. This is where abnormal tenderness and muscular tightness both in the periphery and spinal regions, characterise the problem. Other nerve pathways also interact with the sensitised pain system and result in unwanted signalling. For instance, the A-beta mechanoreceptors gain access to the activated pain system and allow otherwise innocuous stimuli derived from normal movement or maintenance of posture to invoke pain. These mechanoreceptor stimuli from deeply placed para-spinal structures provide the dorsal horn input to initiate reflex referred pain phenomena. This referred pain helps explain the widespread nature of the fibromyalgic pain symptoms[6,7]. It also explains the change in regional pain threshold, another feature of fibromyalgia, as decrease in pain threshold is also part of reflex "referred pain".

Although is it still unclear what causes the sensitisation of the central pain system, it is likely to be related to abnormal activation of the body's hormonal stress responses associated with the hypothalamic-pituitary-adrenal axis and central neurochemical transmission in nerve pain pathways[7,8].

There is some evidence that fibromyalgia is more common in some families, with family members of patients displaying a higher than expected incidence of the condition, as well as related conditions including irritable bowel syndrome, migraine headache and mood disorders[9,10].

Fibromyalgia can develop spontaneously or after exposure to an identifiable trigger, possibly in a person who is genetically predisposed. Triggers are described as environmental stressors and can include injury, especially to the axial skeleton, or illness (e.g. Parvovirus or Hepatitis C). The problem doesn't necessarily need to be severe but often involves anxiety, incapacity or bed rest. Fibromyalgia can also be triggered by stressful situations and major life events and people who develop the disorder can often underestimate the role of stress in their illness[11]. Other situations associated with an increased risk of fibromyalgia range from concurrent chronic illness such as rheumatoid arthritis, systemic lupus erythematosus or hypothyroidism, through to rupture of silicone breast implants[6,9,10,12].

DIAGNOSIS

The current American College of Rheumatology consensus criteria for the classification of fibromyalgia require chronic, widespread musculoskeletal pain and the presence of at least 11 tender points on testing at 18 specified sites (Figure 1, Table 1). The pain must occur in all 4 quadrants of the body and the axial skeleton. Tender points are distinct predictable anatomical sites that are normally more sensitive to pressure than the surrounding tissue. They are different to trigger points in that they are not sites of tissue damage, tightness or pathology, do not produce spontaneous pain, and are usually unknown to the patient. Tender points are seen in many different tissues types, such as muscle, fat and attachment of tendons to bones and reflect global change in pain perception through the process of sensitisation.

Figure 1: Tender point sites for digital palpation. Figure reproduced with permission G. Littlejohn.

To perform a tender point examination, pressure should be applied to each of these sites with the examiner's thumb or index and middle fingers held together - slowly increasing the pressure until approximately four kilograms of pressure is applied (approximately the amount of pressure required to blanch the examiner's nail bed). The patient needs to describe actual pain with the pressure, rather than just discomfort, for the tenderpoint to be considered positive. A patient must accrue 11 out of possible 18 positive tenderpoints to meet the official classification criteria. It is well understood however, that many patients who clearly suffer from the symptoms of fibromyalgia have less than 11 of these tenderpoints. Many people have fluctuating levels of musculoskeletal tenderness, with different testing times, stress levels and medications all having an effect on the number of positive tenderpoints. Men also have a generally higher tenderness threshold and less often have a complete "set" of positive tenderpoints despite clearly having symptomatic disease – which may partially explain why more women than men receive the label of fibromyalgia.

Other symptoms of fibromyalgia include chronic fatigue, altered sleep patterns resulting in unrefreshing sleep, memory disturbance, postural hypotension, dizziness and emotional distress. Symptoms often fluctuate in their intensity and anatomical location, with many patients experiencing "flares" alternating with periods of relatively lower activity. Flares can be induced or worsened by situations such as emotional stress, physical exertion, concurrent illness or even seasonal changes.

OTHER CLINICAL FEATURES

Fibromyalgia can co-exist with any other illness and many other problems can mimic fibromyalgia. Hence, other causes for the symptoms of fibromyalgia must be ruled out before the diagnosis can be confirmed. Many patients with fibromyalgia also satisfy the criteria for other syndromes such as chronic fatigue syndrome and gulf war illness. This has prompted some researchers to consider them as all being different parts of a chronic multisystem illness spectrum, with the principal features of chronic pain and fatigue.

The syndrome is closely associated with many other stress – related problems such as regional chronic pain, irritable bowel syndrome, interstitial cystitis, temporomandibular joint dysfunction, migraine and tension headaches, multiple chemical sensitivities and depression.

On further physical examination, there is usually obvious allodynia (pain in response to non-noxious stimuli such as light touch, movement or posture), and there may be muscle tightness with limited range of motion of spinal segments. Patients often complain of regional swelling that can fluctuate in site and severity, and can be difficult to objectively assess. There is no evidence of inflammation, muscle wasting, degenerative change, neurological abnormality or systemic illness that would explain the symptoms or signs.

MANAGEMENT

Management of patients with fibromyalgia begins with patient education as to the nature of the illness. Many sufferers feel immediate benefit from identification of the problem and reassurance as to the benign and often slowly improving natural history. It is important to counsel patients about the benefits of a healthy lifestyle, incorporating advice about diet, exercise and relaxation. Referral to support networks such as the Arthritis Foundation is also very helpful.

Table 1: Clinically useful sites for evaluating tenderness. These sites are more sensitive to palpation than adjacent sites in pain-free individuals and significantly more sensitive in patients with widespread pain when they are termed tender points. Regional pain syndromes are associated with increased sensitivity in tender points located within the painful region.

Occiput	Bilateral, at the suboccipital muscle insertions.
Low Cervical	Bilateral, at the anterior aspects of the intertransverse spaces at C5 – C7.
Trapezius	Bilateral, at the mid-point of the upper border.
Supraspinatus	Bilateral, at origins, above the scapula spine near the medial border.
Second Rib	Bilateral, at the second costochondral junctions, just lateral to the junctions on upper surfaces.
Lateral Epicondyle	Bilateral, 2cm distal to the epicondyles.
Gluteal	Bilateral, in upper outer quadrants of buttocks in anterior fold of muscle.
Greater Trochanter	Bilateral, posterior to trochanteric prominence.
Knee	Bilateral, at the medial fat pad proximal to the joint line.

Graded low-impact aerobic exercise is an important therapeutic intervention in fibromyalgia. Patients are often extremely de-conditioned and this requires beginning with very low-grade exercise, perhaps in a heated pool. The intensity is slowly increased over weeks or months until the subject is able to exercise at aerobic levels for over 30 minutes almost daily. It is helpful to let the patient choose the type of low-impact exercise they prefer, such as walking or swimming, as this will then suit their lifestyle and be more likely to be sustained. This type of program has been proven to improve pain and fatigue levels in many large controlled studies and is one of the most effective available interventions[13-17]. High-intensity exercise is often poorly tolerated and may aggravate symptoms.

Psychological therapeutic options have been shown to help the pain, fatigue and distress of fibromyalgia[18]. Simple stress management advice can be of benefit to many patients, however sometimes is not a powerful enough intervention to cause change. Cognitive Behaviour Therapy (CBT) and similar formal approaches address areas such as relaxation training, personal sense of control, coping strategies and goal setting, and can translate into significant improvement in pain, functional abilities and other features of fibromyalgia[19-22].

Sleep hygiene advice can help those who have problems with unrefreshing sleep and should include suggestions of relaxation before bedtime, setting and adhering to regular bedtimes and avoiding exercise, caffeine or alcohol before retiring for the night.

Physical therapies play a role particularly in helping with regional symptoms, for instance paraspinal muscle stiffness. Many develop trigger points in addition to the generalised fibromyalgic tenderness and these may require the usual therapeutic approaches. However, treatment needs to be gentler than in someone without fibromyalgia to avoid significant post-treatment pain. Many patients find complimentary therapies, such as yoga, t'ai chi, massage, naturopathy and acupuncture also useful.

Medication therapy for fibromyalgia is available and is best used in combination with the above non-pharmacological approaches. Tricyclic antidepressant medications, particularly amitriptyline, have been most useful in easing pain and fatigue, as well as improving sleep quality. They only provide partial relief however and are only effective in approximately one third of patients[23,24]. Some other antidepressant medications may also have a small positive effect. Simple analgesics, such as paracetamol, can help to ease minor pain, but do not offer

long-term effective control. Non-steroidal anti-inflammatory drugs have no proven benefit. There are some medications that may show promise but require further research into their effectiveness in this situation, for example tropisetron[25].

It is important in any treatment plan for fibromyalgia for the patient to feel they have input in managing their disease. This builds their sense of control over the symptoms and encourages maintenance of therapies that require active involvement such as exercise. Once patients feel that their own actions have an impact on the severity of symptoms, they feel more reassured and empowered, which leads to further improvement in features such as distress.

CONCLUSIONS

Fibromyalgia is a common, debilitating disorder with widespread and fluctuating symptoms. It is important to recognise the diagnosis, so that the patient has access to an appropriate therapeutic strategy. Management of fibromyalgia is best carried out using a multimodal, holistic approach, with involvement of the patient's local doctor. The patient themselves needs to be encouraged to take an active role in their own treatment which augments any other therapeutic benefits.

SUMMARY OF IMPORTANT POINTS

- The features of fibromyalgia result from an abnormal sensitisation of the pain-related central nervous system.
- Symptoms can be multiple, widespread and fluctuating, with flares induced or worsened in situations of physical or emotional stress.
- Management is most effective when synergistic multimodal treatments are used by a multidisciplinary team involving the patient's local doctor.

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