Arm ache

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Abstract Both patients and providers hope for better management strategies for nonspecific activity-related upper limb pain (herein referred to as “arm ache”). The next innovation in the care of arm ache may arise from the strong evidence that mood, coping strategies (e.g., catastrophic thinking), and heightened illness concern—all very responsive to treatment with cognitive behavioral therapy—account for a large percentage of the variation in symptom intensity and magnitude of disability. This focus on treatments to reduce symptoms and disability represents a change in culture for patients and providers, both of whom are accustomed to the biomedical framework that anticipates a direct correspondence between illness (the state of being unwell) and disease (pathophysiology). Not all patients are ready for such an approach, but as a first step health providers can prioritize empathy; remain mindful that words, illness concepts, and treatments can reinforce ineffective coping strategies; and encourage curiosity about the human illness experience.

Keywords Coping strategy · Biopsychosocial framework · Biomedical framework · Arm pain · Cognitive therapy · Rational therapy

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Introduction

Nonspecific activity-related arm pain is common. It can be associated with vocational, scholarly, or avocational (e.g., music/exercise) activities. Repetitive strain injury may be the modern version of what was once known in North America as “writer’s cramp” [25]. For more than a century, nonspecific activity-related arm pains were ascribed to new technologies [25]. Such illness constructions have several shortcomings: (1) they imply an objective impairment or pathophysiology where none can be identified, (2) they stigmatize and demonize hand use, (3) they provide no benefit in treatment and may distract patients and providers from effective treatments such as cognitive behavioral therapy, and (4) there is compelling evidence—most recently from the Australian epidemic—that these illness constructions actually increase illness behavior [22, 25]. Stated more directly, there is compelling evidence that health providers have mismanaged nonspecific activity-related arm pains in a way that actually increases illness both in specific patients and in populations in general.

We might one day identify not only the underlying pathophysiology, but also potential disease-modifying treatments for arm pains that currently puzzle us. But given the frustrations associated with headaches and backaches in spite of years of research, management strategies in the absence of disease-modifying treatment are important. A detailed examination of this process suggests that there are effective methods to help patients with nonspecific activity-related arm pains that are underappreciated and underutilized.

The Australian RSI Epidemic

In Australia in 1983, an illness characterized by activity-related pain without any objective pathophysiology or impairment was labeled “repetitive strain injury” (RSI) and

promoted [22, 25, 50]. An analysis of the resulting epidemic of disabling nonspecific arm pain suggests that it was a psychosocial phenomenon [4, 19, 22, 25, 50]. In other words, a well-intentioned illness construction led to a widespread of illness similar to what is observed in outbreaks of conversion disorder [4, 19, 50].

A key incentive for growth of the epidemic was claims for compensation. But the court reviewed the evidence and concluded that repetitive strain injury is a misnomer because there is no evidence of injury [4, 19, 22, 25, 41, 50].

Psychologists describe the normal human protective response to pain as catastrophic thinking. We prepare for the worst, and sometimes we take it too far and become more symptomatic and disabled than we deserve. The Australian epidemic of “RSI” reminds us that humans in pain are vulnerable. Such medical missteps teach us that the creation of an illness construction that stigmatizes and demonizes hand use while implying that there is some progressive objective impairment or pathophysiology contributes to more symptoms and disability. If we are honest with ourselves, the Australian epidemic of RSI is a sobering example of man-made illness, the power of psychological and sociological influences, and the need for caution, compassion, curiosity, and humility among health providers [4, 19, 22, 25, 41, 50].

Science

Medicine is a science-based profession, but science as curiosity or applied skepticism needs emphasis. In the modern world, things are often explained in scientific terms without having good evidence from experiments designed to account for human adeptness at pattern formation and rationalization. Such pseudoscience lacks basic elements of science such as falsifiability/verifiability, reproducible objective measurements, and clear definitions [35].

Pseudoscience is a trap for all humans, including medical authorities. Man-made diagnoses are often presented side by side with truly scientific concepts in medical education. The appeal of pseudoscientific diagnoses and illness constructions can be explained in part by the fact that humans prefer to have a name for their problem. A specific diagnosis can relieve any suspicion of malingering and allows the patient to join a community of sufferers. On the other hand, diagnoses can lead to misuse of resources and iatrogenic harm. In particular, a biomedical label (e.g., “fibromyalgia”) might distract patients from the psychosocial and psychological aspects of their illness and arguably from the most effective treatment strategies [5, 9, 12–16, 37].

Some hand surgeons diagnose electrophysiologically normal carpal tunnel syndrome or “atypical carpal tunnel syndrome” (ACTS) based more on diffuse and disabling pain than on the numbness more typical of carpal tunnel syndrome.

There is an attempt at scientific verification of this diagnosis in experiments that measure serum neuropeptide [2]. Other debatable diagnoses in hand surgery include most diagnoses of thoracic outlet syndrome, pronator syndrome, radial tunnel syndrome, and pre-dynamic scapholunate instability. The common thread is disabling symptoms with no objectively verifiable pathophysiology. Hand surgeon diagnoses can lead to surgery. When psychologists and psychiatrists treat illnesses with substantial symptoms and disability but no objective pathophysiology, they manage them as somatoform disorders. Techniques such as cognitive behavioral therapy are measurably effective. Surgery for hand and upper extremity illnesses characterized by substantial symptoms and disability with no measureable impairment or pathophysiology may not only be unnecessary and potentially harmful (benefitting only from the placebo effect), but it may also distract the patient from effective treatment with cognitive behavioral therapy.

Psychology

The normal functioning of the human mind is prone to errors. In particular, we take shortcuts to things that are familiar, we try to limit effort in rethinking our interpretations, and we tend to prepare for the worst in response to noxious stimuli. Rational thought and science are tools that humans have developed to keep these intuitive, “first line” thoughts and emotions in check. Cognitive behavioral therapies and behavioral exercises help humans develop their rational control of gut feelings. There is strong evidence that these programs decrease symptoms and disability (they increase health and wellness), independent of the type and degree of pathophysiology present.

The evidence is strong that psychological and personality factors are as important as or even more important than the pathological process in the experience of pain, especially when the source of nociception is vague or uncertain. Patients with idiopathic arm pain often report more extreme pain and experience more anxiety than patients with arm pain with an identifiable source [32, 34].

Nonspecific arm pain may be a somatic presentation of psychological distress or a representative of a heightened sensitivity to bodily sensations. Lower mood and ineffective coping strategies are major factors [32, 34].

Patients with nonspecific arm pain exhibit high levels of catastrophic thinking in response to pain and show a tendency for increased somatic complaints [32, 34]. The opposite of catastrophic thinking is self-efficacy—a sense of control and confidence that things will turn out satisfactorily. Patients with lower self-efficacy/greater catastrophic thinking experience higher pain intensities [28, 48, 51]. A somatoform disorder is diagnosed when disabling symptoms cannot be attributed to an objectively verifiable disease [46]. Patients with increased

concerns about their health interpret benign symptoms as indicative of serious illness [45]. Psychosomatic complaints seem to have gradually moved away from objectively verifiable complaints (e.g., paralysis) to subjective symptoms that cannot be objectively proved or disproved such as pain and fatigue [1].

Psychosocial stressors in the workplace appear to play an important role in disabling nonspecific pains [6, 26, 30, 31, 38, 49]. Workers experiencing a combination of physical and psychological stress are more likely to report arm pain [6, 38].

One of the strongest risk factors is dissatisfaction with support from colleagues or supervisors [26]. Working situations characterized by high psychological demands, low decision latitude, and low social support play an important role in perception of pain in the upper limb, especially in women, and it seems that there is a synergetic relationship between mechanical exposure and job strain [6, 30, 38].

A New Approach

Illness is the state of being unwell. Humans can be ill without having disease (pathophysiology) [44, 49]. Consequently, the biomedical framework—which expects a strict correlation between nociception (actual or potential tissue damage) and pain (discomfort)—is inadequate. A biopsychosocial framework that takes advantage of the opportunities based on how humans interpret and respond to symptoms seems more appropriate and helpful [44].

Every patient with upper extremity pain should be evaluated and monitored to be sure that treatable pathology is not overlooked. Patients without identifiable pathophysiology are diagnosed accurately, neutrally, and descriptively as “nonspecific upper extremity pain.” This is essentially “arm ache.” Just like headache or backache, arm ache is common, annoying, and frustrating but has no identifiable or worrisome pathophysiology. Pathophysiological terms such as “tendonitis” or “atypical carpal tunnel syndrome” should be avoided when they are speculative and debatable. The term “work-related upper extremity disorder,” although descriptive, is unhelpful because it stigmatizes work and implies a causal relationship. Arm ache is preferable.

Indiscriminate use of diagnostic tests in the setting of arm ache (vague diffuse idiopathic upper extremity pain) is unlikely to yield useful information and may lead to overinterpretation of age-related changes or expected variations. This might lead to unnecessary treatments. Time is often the best diagnostic test [33, 44].

Nonspecific illnesses are treated nonspecifically (e.g., ice/heat, acetaminophen/NSAIDs, splints, stretching/conditioning, etc.) [11, 20, 29]. Following the lessons learned in the management of low back pain, in the absence of pathophysiology requiring restriction of activity (e.g., a

healing fracture), activity is not restricted [17, 47]. Continuing with a normal routine is an important part of recovery, and pain avoidant behavior is part of the illness [3, 17, 44, 47].

The role of ergonomic interventions is debatable. They might be useful for optimizing comfort, but promotion of a “correct” way to do things creates a corresponding “incorrect” way that is counterproductive in the context of an illness strongly influenced by catastrophic thinking and heightened illness concern. There is evidence that ergonomic interventions have done little to reduce workplace complaints [8, 27, 30, 43].

Self-efficacy (the belief in success based on one’s own initiative; “I can do it...everything will be fine”) is a cognitive factor associated with fewer symptoms and less disability. Patients with high levels of self-efficacy choose active coping strategies such as distraction (mental focus on something other than that the problem), reinterpreting pain sensations, and positive coping statements. Self-efficacy can be learned, practiced, and grown [10, 18, 36, 42, 44].

Psychological interventions such as cognitive behavioral therapy and biofeedback are effective in growing self-efficacy. Cognitive behavioral therapy forms an important part of an interdisciplinary approach to arm ache [7, 21, 23, 24, 39, 40, 44].

Conclusion

The treatment of arm ache can be frustrating. Physicians can contribute to symptoms and disability with inappropriate reactions (such as ordering too many tests, applying inappropriately specific or stigmatizing diagnoses, and recommending potentially unnecessary treatments) that unintentionally encourage illness behaviors. An honest explanation of the uncertainties and an empathetic acknowledgement of psychological and sociological factors may help the patient seek help developing effective strategies for managing symptoms.

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