Common conditions of the upper limb such as carpal tunnel syndrome, epicondylitis, de Quervain’s disease, Dupuytren’s disease, ganglia and carpometacarpal arthritis in the thumb have been attributed to manual activities which require force, repetition or the use of an awkward posture, alone or in combination. Orthopaedic articles and textbooks which describe these conditions often contain statements that they are more common in manual workers, or that they may be caused by work or ‘overuse’. What is the evidence that such statements are true? de Quervain’s disease was called ‘washerwoman’s strain’ because there was discomfort when wringing out clothes or turning a mangle. When the condition occurred in the post-partum period, as frequently happens, it was attributed to wringing out nappies. Washerwomen are extinct in the Western world and disposable nappies are the norm, yet the complaint is still seen in middle-aged women and young mothers. The fact that a condition results in pain when carrying out a particular task does not necessarily indicate that the task has caused it, just as the narrowing of the coronary arteries which results in angina is not caused by walking quickly.

Epidemiological studies are used to establish a link between exposure to a possibly injurious agent, or a risk factor, and disease. Individuals exposed to the agent are compared with a matched group in order to determine if the exposed population has a greater incidence of the condition. If the incidence is greater, then an association between the agent and the disorder can be inferred, although this does not necessarily establish a causal relationship.

Epidemiological techniques, however, are fraught with difficulties in the study of disorders of the upper limb. Many patients do not present with clear-cut physical signs and there may be no objective test, such as radiography, to confirm the diagnosis. Although an orthopaedic surgeon may feel confident in diagnosing one of these conditions in an individual seen in the clinic, it is a different matter when attempting to screen a large group of manual workers, most of whom will not have an abnormal condition. In many epidemiological studies the diagnostic criteria for individual conditions either may not be clearly stated or all disorders of the upper limb may be classified together. The number of people in whom the condition has been identified is usually small in relation to the number in the group who are screened. Control groups are often absent or poorly matched in terms of age and gender. The examiner is frequently aware of the occupational category of the ‘patient’, which produces a strong risk of bias. In addition, the exposure to the presumed injurious agent may not have been measured.

Some ten years ago a working party was established by the British Orthopaedic Association to review the available scientific evidence concerning the causation of the disorders of the upper limb. At that time the Industrial Injuries Advisory Council had asked interested bodies to advise whether there was evidence that further disorders should be added to those already designated as industrial diseases. In summary, the conclusion of the working party was that no other disorders of the upper limb should be added to the list. The recognised disorders were cramp of the hand and forearm related to repetitive work (prescribed disease (PD) A4) and traumatic inflammation of the tendons of the hand and forearm or of the associated tendon sheaths occurring in those involved in manual labour or whose occupation required frequent or repeated movements of the hand or wrist (PD A8). Carpal tunnel syndrome occurring in those using hand-held vibrating tools is now designated PD A12.

We were asked by the Council of the British Orthopaedic Association to review more recent publications to see if there had been changes in the last ten years. Epidemiological studies of poor quality continue to be published but attempts have been made to improve the criteria for diagnosis in such studies. In the USA the National Institute for Occupational Safety and Health identified and reviewed epidemiological studies which avoided many of the pitfalls.
of the surveys described above. By the criteria of those involved in the studies there was reported to be “strong evidence” in both epicondylitis and carpal tunnel syndrome of an association with occupational tasks which had a combination of repetition, force and posture. Similar studies in the USA have come to the opposite conclusion. What is clear from these and many other surveys is that there is no evidence to sustain a causative link between light occupational tasks and most conditions of the upper limb, other than those already accepted as occupational disorders. An association does not signify causation, but may simply indicate aggravation of symptoms.

Ten years ago the term ‘repetitive strain injury’ was frequently used as a blanket diagnostic term to include identifiable disorders, as well as non-specific pain in the upper limb without physical signs. The view was widely held that these conditions developed as a result of a slow accumulation of minor and undetectable tissue damage. This unsatisfactory term has been discarded and the term ‘work-related upper-limb disorder’ (WRULD) has taken its place to describe painful conditions which affect those in employment, although the same conditions can occur in those who are not in regular employment. WRULD is a neutral term which does not imply the presence of an ‘injury’. However, it is not a diagnosis and ‘work-related’ may be interpreted in different ways. In the UK it is generally taken to mean that discomfort from the condition affects the ability to work. In the USA it may mean the same, or alternatively that the employer or the employer’s insurer pays for any medical treatment which may be required. ‘Work-related’ does not mean that any underlying condition has necessarily been caused by work. However, since the term does not distinguish between a condition and the uncomfortable symptoms which it may produce, claims have been made that WRULDs can be prevented by providing a more comfortable working environment. Although such conditions are clearly desirable, there is no evidence that modifying the posture, avoiding forceful activities or preventing repetition will prevent the occurrence of these disorders, with the exception of peritendinitis crepitans, which already comes under PD A8.

Orthopaedic surgeons should be aware of these issues. An assertion that a particular problem in the upper limb has been caused by work should only be made after careful consideration and with due regard to the quality of published work. Exacerbation of symptoms should be distinguished from causation of the underlying condition. The aetiology of these conditions will be discovered by scientific research, not by debate among those who hold strongly opposing views. It should be noted that legal decisions are made on the evidence presented to the Court in individual cases. Hence they are not always consistent and may not reflect current scientific evidence.

References