Computer Usage and Musculoskeletal Disorders [MSD's]

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Abstract

Wide spread usage and heavy dependence on computers and computer based gadgets and life styles have given rise to a number of musculoskeletal disorders [MSD's] associated with computer usage. These health problems are not yet described in standard text books for their etiological association with computer usage. On one hand not many orthopaedists are aware of these conditions, on the other, very few studies have been carried out. The studies are on computer professionals and university students. Needs are felt for studies on other subpopulations and for sensitization of treating health care professionals.

Introduction

In 21st century world computers have become essential as well as ubiquitous in every aspect of life. They have become an epitome of modern life. Mankind’s dependence on computers is ever increasing owing to their dwindling prices, and their being embedded in various forms in numerous gadgets. Computers have become an indispensable tool in everyone’s hands and life. However, it does not come without a price. Computer usage is lately being associated with a wide group of health problems covered under Musculoskeletal Disorders (MSD’s)

Review

Heretofore MSD’s associated with computer usage have not been described in standard orthopaedic text books but during the last couple of decades some interesting and eye-opening articles related to ophthalmology as well as other specialties have been published online, in national and international journals. Musculoskeletal disorders are sometimes called ergonomic injuries and illnesses. Ergonomics is the study of the worker’s interaction with tools, equipments, jobs, tasks, work methods, work rates, and other systems. The USA – BLS [Bureau of Labour Statistics] defined musculoskeletal disorders as injuries and disorders to muscles, nerves, tendons, ligaments, joints, cartilage, and spinal discs. MSD’s do not include injuries resulting from slips, trips, falls, or similar accidents. Examples of MSD’s include many kinds of sprains and strains, carpal tunnel syndrome, tendonitis, sciatica, and low back pain. MSD’s result from bodily reactions due to bending, climbing, crawling, reaching, or twisting, and from overexertion and repetitive motions. Majority of MSD’s have been sprains, strains, and tears caused by overexertion. These claims alone accounted for 60 per cent of all MSD’s between 1996 and 2000 in a study. Recently the share of MSD’s due to overexertion has been shrinking as the proportion of disorders resulting from repetitive motion and bodily reaction is on the rise.

The term work- related musculoskeletal disorders [WMSD’s] comprises various conditions both clinically defined (e.g. carpal tunnel syndrome) and clinically undefined that affect nerves, tendons, muscles and support structures: the aforementioned conditions are products of the accumulated effect of repeated traumas associated with labour risk factors. The most common causes for these disorders are static body positions, repetitive motions, prolonged muscular contractions, and the use of force.

Complaints of Arm, Neck and Shoulder [CANS] were recognized in the early seventies as an important cause of work disability. The term CANS was introduced in Netherlands and indicated “musculoskeletal complaints of arm, neck and/or shoulder not caused by acute trauma or by any systemic disease” They were introduced as ‘occupational cramps’ or ‘occupational myalgia’ and suspected of being associated with numerous occupations and work activities. The relative time spent in front of computers and the use of a computer mouse has increased rapidly over the years. It is likely that these developments may have contributed to the increasing burden of CANS.

Over half of American adults own a laptop computer. In Australia laptop prevalence was 63% of all households in 2008 and is increasing. India has been in the forefront of cyber world with IT industry developing into a major service provider. Work place risk factors of daily computer use include number of hours per week of computer usage, working in
non–neutral body postures [e.g. reaching for mouse, looking up at a computer monitor], increasing age, and being female. Generally non-neutral postures are considered detrimental. In a systematic review of epidemiologic studies of video display terminal work the following specific risk factors were identified: wrist ulnar deviation, wrist extension, elbow flexion, shoulder flexion, as well as neck flexion and rotation. A growing body of epidemiologic evidence supports a causal relationship between repetition, force, posture, upper extremity musculoskeletal disorders [18,11,14].

Today’s university students are part of a millennial generation sometimes called generation Y or the Net generation and are the first truly digital generation. The use of notebook computers has become integral to these talented and net-savvy students as they become immersed in technology in both their academic and social networking daily lives. From 2006 to 2009 ownership of notebook computers by university students increased from 66% to 88% and the trend is expected to continue as students embrace their portability, light weight and pace saving features [08,15].

Conclusion

A twofold need is felt:
1. To create awareness and sensitize orthopaedists and other specialists to keep in mind computer usage as one of the causative factors related to musculoskeletal disorders. Patients may be spared from many expensive and avoidable investigations by a proper history taking.
2. Absence of a study on MSD’s associated with computer usage among health care professionals and / or health care college students as well as many other vulnerable subpopulations is a strong indication for undertaking such studies without further delay.

Bibliography