

Prevalence of Cervicogenic Headache in Computer Users in New Normal

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Abstract: Cervicogenic headache is a common chronic and recurrent headache. It could be confused with a migraine, tension headache, or other primary headache syndromes. Patients usually complain of a unilateral pain without side shift. It is ordinarily predominant in females. Pain topography is usually stemming from the neck, spreading to the oculofrontotemporal area. Pain is moderate to severe, is worsened by neck movement. Purpose was to study the incidence of cervicogenic headache in computer users. This study to assessed 100 IT Professionals both male & females between the age of 25-40, working for more than 3 years, by performing cervical flexion-rotation test. The result of the Study was total 67% of participants were found positive with cervical flexion rotation test. The greatest cause of cervicogenic headache is a bad posture and long hours of sitting that exerts pressure on the upper cervical spine indirectly leading to headaches.

Keyword : cervicogenic headache , computer user , Cervical Flexion Test, bad sitting posture.

Introduction

In new normal there are many changes occurred in work culture. Work from home culture have adapted to wrong ergonomic work seating & more sedentary lifestyle as increased in working hours ^[1]. Use of laptop & desktop has improved the productivity of human beings but on the other hand it has led to visual impairments, Musculoskeletal pain, headache & other issues such as biopsychosocial problems [1,2]. Due to more use of smart devices, there is persistent stress on cervical spine due to prolong flexed position of head & neck causes musculoskeletal imbalances such as decreased head & neck range of motion, lack of sleep and lethargy ^[3]. Laptop & desktop users have common musculoskeletal complaints such as shoulder, neck pain with radiating feature. Computer users are more prone for the neck pain than the other occupations ^[4]. The prevalence of neck pain is 50% due to abnormal postural attitude which interfere with the daily life and affects the functional activities ^[4]. Cervicogenic headache may become debilitating if not properly address and may need frequent visits to monitor as the prognosis may be depending upon the age, intensity of headache on movements ^[5].

A cervicogenic Headache (CGH) presents with a cardinal features as follows – one sided chronic recurrent & long lasting, severe, pain starting from the neck Pain is precepted by neck

movements. Pain is usually accompanied by reduced range of motion (ROM)^[7,8]. The pain may be misinterpreted as other primary headache syndromes, tension headache, migraine, a patient with cervicogenic headache are having disturbed quality of life than those with migraine [9,10]. Diagnosis of this pain is based on the cardinal features such as source of pain should be from neck (occiput) – temporal region, radiated to postorbital- frontal- shoulder & arm. Other symptoms includes dizziness, nausea, vomiting, blurred vision, irritability, patients are mostly females with managerial & professional occupations than clerical staff, with monthly frequency more than 18 episodes^[8]

Cervicogenic headache is basically a referred pain originated by irritation cervical structure which are innervated by C1, C2, C3 nerve roots. Structure innervated from C1 – C3 are the structures for cervicogenic headache^[10,11]. C2 dynatome is 6-8 cm wide from occiput to vertex & C3 dynatome covers ear, pinna, lateral cheek, angle of jaw^[8]. Aseptic inflammation and neurotransmission within the C-fibres that is caused by cervical disc pathology is thought to produce and worsen the pain in a cervicogenic headache. Trigemino-cervical nucleus receives signals from the trigeminal nerve and C1, C2, C3 spinal nerves. Chronic spasm of - shoulder, neck, scalp, muscle strain, habituated improper posture, whiplash, Neck trauma, patients low pain threshold contributing to more severe pain. Early diagnosis and treatment will be proved helpful^[10,11]. A frequency and duration of physiotherapy sensation depends upon the severity, 30 minutes to 1hr of physiotherapy sensations with patients education, lifestyle modification, proper home exercise program by videos, handouts, online resources will help the patients^[12]

Physical therapy is considered the first line of treatment. Manipulative therapy and therapeutic exercise regimen are effective in treating a cervicogenic headache. According to a study by Jull and Richardson, 72% of patients had achieved a reduction of 50% or more in headache frequency at the 12-month follow-up, and 42% of patients reported 80% or higher relief of some sort. These manipulative maneuvers stimulate neural inhibitory systems at various levels in the spinal cord and activate descending inhibitory pathways^{[13][14]}.

Research done by Sarah Mingles et. al on lower spinal postural variability in laptop users in subjects with cervicogenic headache compared to healthy individuals concluded that there is reduced spinal postural variability (SPV) in the group with cervicogenic headache compared with the control group^[15]. Another study done by Sarah Mingles et. al for finding multidimension characteristics cervicogenic headache evaluated relation of pain processing - pressure pain threshold), lifestyle includes - sleep quality & screen time, physical activity, sedentary life style) & psychosocial factors include – stress, anxiety & depression. All factors are influencing one

another but there is much more need for extensive research targeting lifestyle & psychosocial factors ^[16].

Methodology:

Ethical clearance was obtained from the Ethics Approval Committee of the Institution.

100 participants both male and female between the age of 25 to 40 year with the work experience more than 3 years and who are working for 8 to 10 hrs daily were recruited for the study using convenient sampling.

Cervical flexion rotation test was performed.

Patient was relaxed in supine.

Examiner fully flexed the cervical spine with the occiput resting against the examiner's abdomen. The patient's head was then rotated to the left and the right. If a firm resistance was encountered, pain provoked, and range was limited before the expected end range, then the test was considered positive, with a presumptive diagnosis of limited rotation of C1 on C2. Test

was considered positive when the estimated range was reduced by more than 10° from the anticipated normal range (44°). It was made sure that the subject was alright and stable after completion of the test. Statistical analysis was performed on the collected data.

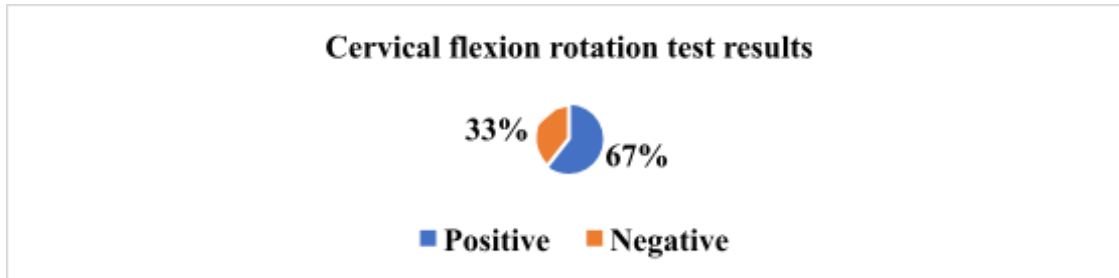
Results:

100 participants were recruited for the study, Male – 63 and Female – 37, with mean value and standard deviation of age 31.31 ± 4.46 years, years of experience 7.35 ± 3.704 years and duration of working hours is 8.47 ± 0.643 hours. The demographic details are presented in tables below:

| | Age (in years) | Experience (in years) | Duration of working hours (in hours) |
|-------------------------------------|------------------|-----------------------|--------------------------------------|
| Mean with standard deviation | 31.31 ± 4.46 | 7.35 ± 3.704 | 8.47 ± 0.643 |

Table 1: Demographic data and work experience

Interpretation: The characteristics of participants are shown in Table 1. The study comprised of 100 participants having mean age of 31.31 ± 4.46 years. The mean experience and duration of working hours of the participants were 7.35 ± 3.704 years and 8.47 ± 0.643 hours respectively.



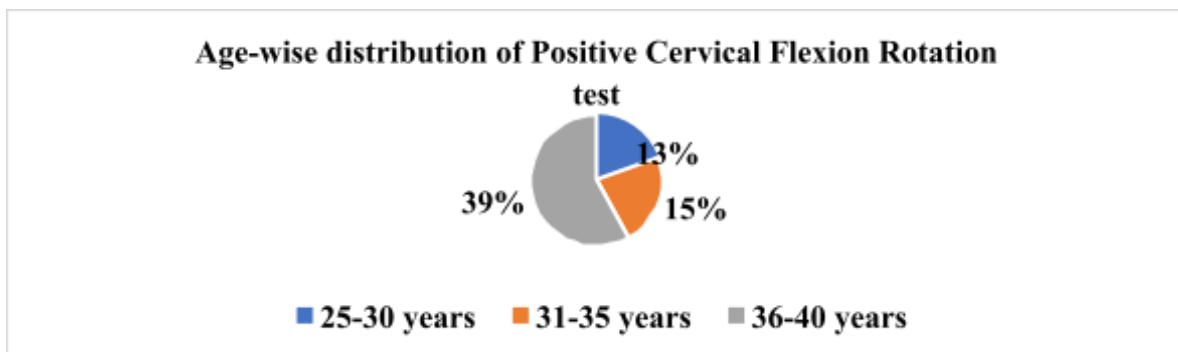
Graph 2: Distribution of positive cervical flexion rotation test among computer users

Interpretation: Graph 2 shows % of positive and negative cervical flexion rotation test among participants.

| Age group (in years) | N (%) | Positive Cervical Flexion Rotation Test | | | Total |
|----------------------|-------|---|------|------|-------|
| | | Right | Left | Both | |
| 25-30 | 13 | 4 | 5 | 4 | 13 |
| 31-35 | 15 | 4 | 6 | 5 | 15 |
| 36-40 | 39 | 14 | 19 | 6 | 39 |
| Total | 67 | 22 | 30 | 15 | 67 |

Table 2: Positive Cervical flexion rotation test among different age groups.

Interpretation: Table 2 shows % of positive cervical flexion rotation test involving either left, right or both sides in cervical flexion in different age groups among the participants.



Graph 3: Age-wise distribution of Positive Cervical Flexion Rotation test

Interpretation: Graph 2 indicates a total of 67% of participants categorized according to age groups with positive cervical flexion rotation test. Majority of the participants (39%) were found

to be positive under age group of 35-40.

Discussion:

Headaches and neck pain are reported to be among the most prevalent musculoskeletal complaints in the general population. A significant body of research has reported a high prevalence of headaches and neck pain among adolescents[17]. There are more musculoskeletal dysfunctions with cervicogenic headache which will increase with prolong laptop & desktop use, there would be following dysfunctions posterior pelvic tilt, thoracic flexion, slumb sitting posture, forward head posture. A study by Caneiro et, al. concluded that thoracolumbar sitting variations will lead to abnormal muscle activation, slumb sitting will lead to forward head posture as a result thoracic & lumber spine might freeze

to protect spine[1]. Farjad Afjal et, al. done a online research on cervicogenic headache by sending online questioner by to 200 computer users, out of that 69 had a head & neck pain, the most common cause was use of laptop & adaptive wrong posture while using computers[18]

This study focused on evaluating, recognizing, and explaining the prevalence of cervicogenic headache and association of pain among computer users. The cervicogenic headache is mostly neglected or left untreated. The computer user population was considered for study as they work continuously on computers and have chances of occurring musculoskeletal problems due to long, odd, varying working hours and prolong screen timings habituated bad or wrong postural adaptations. The aim was to find out the percentage of cervicogenic headache in computer users. The study was conducted as survey method. Study was done at various IT companies around pune city. Samples that have specific disorders of the cervical spine, instability were excluded. In this study the 100 samples were selected based on the inclusion and exclusion criteria. This study evaluated the different symptoms which were based on the diagnostic criteria of the cervical flexion rotation test by Cervicogenic Headache International Study Group. The present study manifested that unilateral headache and neck pain, persistent deep pain in nature, and decreased subjective neck mobility are the most common features among participants. This current study concluded that the prevalence of cervicogenic headache was 67%. The most affected age group was 36 to 40 years with 39%, which was followed by 31 to 35 having 15% of affection and least affected age group was 25 to 30 years with 13%.

During the computer use, there is increased neck flexion and head tilt, causes compression among the 20 vertebrae and strain in tissues. In this study, most were aware that their pain was due to wrong posture during the use of laptops and computer. Bad postures are contributing factor in discomforts and fatigue in activities of daily life. A study concluded that

most of computer users do not use adjustable height and key board and the most frequents complains among the computer workers was headache, neck pain and low back pain. Results of our study also similar to a study in which they concluded that neck pain among computer worker is associated with forward head posture [17].

Study done by Gaurai Gharote, et, al. concluded that bad sitting posture, prolonged periods of sitting or static postures in general, having an inappropriate worksetups, getting overtired to the point of exhaustion. Considering that Cervicogenic headache is a daily chronic pain, surprisingly only 2% had consulted a neurologist and only 10% had consulted a pain clinic. This may be due to moderate pain intensity. The lack of consulting a headache specialist may also contribute to medication overuse [19].

Study done by Sara Aabroo, Sidra Shafique et, al. concluded that there is a association between TMJ joint dysfunction & cervicogenic headache. Also, pressure on neck & back of the ligament causes breathing problem showing the association between neck pain & breathing [3].

Another study done by Sarah Mingles MPT, Wim Dankaerts et, al. about the head tilts and forward head positions during the laptop use in females concludes that increased use of laptop had also increased head & neck pain syndromes. More neck flexion & head tilts, less head movements and shorter viewing distance along with head protrusion and mandibular dysfunction will induced cervicogenic headache [20]. Prolong sitting hours with less breaks or rest time in between leads to poor posture, physical inactivity increases mental, physical & psychological stress and lead to radiating pain to the head. A computer users have more demands on postural support due to which work related musculoskeletal disorders (WRMSD) are more seen [21]. Segmental hypomobility at C0 – C2, with significant hypomobility at C2 – C3, C5 -C6, C6 -C7 would be a cause for cervicogenic headache [8]. Cervicogenic headache is caused in upper cervical region by interaction of upper cervical nerves and trigeminal complex, middle and lower cervical complex headache is also been noted. Cervicogenic headache needs multidisciplinary approach including medical, pharmacological, Physiotherapy etc.[22]

Our study demonstrated that there was a decrease in subjective neck mobility among participants from computer user population. This study also demonstrated the significant association between cervicogenic headache and working postures among computer users. The significance level of 0.005% among working positions and cervicogenic headache is depicted in this study. This finding is supported by another study article.

among computer users. This study evaluated the association between cervicogenic headache and working postures and positions among computer users. Long working hours in front of a screen could expose computer users to headache and neck pain.

Conclusion:

There is prevalence of cervicogenic headache among IT professionals. The greatest cause of cervicogenic headache is a bad posture and long hours of sitting that exerts pressure on the upper cervical spine indirectly leading to headaches.

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