International Journal of Advanced Scientific Research
ISSN: 2456-0421
Impact Factor: RJIF 5.32
www.allscientificjournal.com
Volume 3; Issue 5; September 2018; Page No. 66-69

Prevalence of cervical radiculopathy in general population

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Abstract
Cervical radiculopathy is one of the commonest musculoskeletal conditions. The etiology of cervical radiculopathy is poorly understood. In spite of long duration for treatment protocol recurrence rate is common.
Objective: The present study was undertaken to observe the prevalence of cervical radiculopathy and factors which are responsible for its underlying cause.
Method: 60 subjects diagnosed with cervical radiculopathy were included in the study. The data was collected by questionnaire form and was analyzed using SPSS 14.0 and graph pad 6.7 version.
Result: 80% of cases were in the age group between 30-40 years and 20% were more than 40 years. 33.33% was males and 66.66% females. In occupation wise distribution 33.33% subjects were housewives, 20% were clerks. In computer operator 91.66% were females and 8.33% were males. In involvement of radiculopathy to right hand was 75% and 16.66% of left involved
Conclusion: From the present study it is concluded that the prevalence of cervical radiculopathy is strenuous work related.

Keywords: radiculopathy, cervical disc herniation, neurodynamic

Introduction

Cervical radiculopathy (SR) is a multifactorial nerve root injury that can result in significant pain, psychological stress and disability. It can occur at any level of the spinal column with the highest percentage in the lumbar spine. Amongst the various interventions that have been suggested, neural mobilization (NM) has been advocated as an effective treatment option. The purpose of this review is to (1) examine pathophysiological aspects of spinal roots and peripheral nerves, (2) analyze the proposed mechanisms of NM as treatment of injured nerve tissues and (3) critically review the existing research evidence for the efficacy of NM in patients with lumbar or cervical radiculopathy. a disease of the cervical spinal nerve root and is most commonly caused by a cervical disc herniation or other space occupying lesion (typically osteophytic encroachment associated with cervical spondylosis) that may result in nerve root impingement, inflammation, or both [1, 2].

Radha Krishnan reported annual incidence of 83.2 per 1,00,000 population in Minnesota in 1994.[1]Cervical radiculopathy is common in middle age with increased prevalence in 5th decade of life with male is to female ratio 2:3 [1, 3].

The management of cervical radiculopathy merits careful consideration because a substantial proportion of patients with cervical radiculopathy may require surgical intervention [4], and are often treated by physical therapist[5]. Because cervical radiculopathy is a familiar condition encountered by many clinicians, it would seem that the protocol for management should also be well established. Several large epidemiological studies of cervical radiculopathy published from 1976 to 1990 were located [1, 6]. The prevalence of cervical radiculopathy has been estimated at 3.3 cases per 1000 [6] with an average age-adjusted incidence rate of 0.8cases per 1000 persons [1]. Peak incidence of cervical radiculopathy is most frequently reported to occur in the fourth or fifth decade of life [1, 6] with an annual incidence of 2.1 cases per 1000 for this age group [1]. There is general agreement that involvement of the C6 and C7 nerve roots secondary to lesions of the C5-6 and C6-C7 motion segments are most common [7]. However, whether the C6 or C7 is the most commonly affected nerve root depends on the case series of patients reported, with most favoring the C7 [8, 9, 1] versus C6 [10, 11, 12] level, based on surgical or laboratory study findings. It is unclear whether there is a predominance based on sex. Some reports show that cervical radiculopathy is predominant in men [13], and other reports have shown predominance in women [6]. Cervical radiculopathy is said to be of non traumatic origin and occurs spontaneously in the majority of cases [14]. one large epidemiological study reported that a history of physical exertion or trauma occurred in only 14.8% of the 561 patients studied [1]. Cervical radiculopathy is most often attributable to a lesion of the nerve root secondary to cervical disc herniation [15] and spondylosis [12, 1]. These space occupying lesions are often classified as "soft" or "hard" discs [9].

Aims & objectives of study

The Aim of the study was to observe the prevalence of cervical radiculopathy in General population. The present study was carried out in physiotherapy department of M.Y. Hospital, Indore with complain of neck pain radiating into upper extremity or back.

Material & Methodology

Study design: Observational Study.
Sampling method: Simple random sampling.

Inclusion criteria

Patient with neck pain radiating into upper extremity with positive upper limb neurodynamic test 1.(median nerve biased) diagnosed on the basis of clinical history, examination & diagnostic test 2. Patients between age group of 25-60 yr with symptoms from >2 wks to 6 month 3.Both genders 4.Patient who gave informed consent & were able to attend clinic for treatment & assessment5.Patient with unilateral UE symptoms.

Exclusion criteria

1. Patient with cervical instability 2. Patient with cord compression 3. Patient with any medical red flag. (i.e. spinal tumor, fracture, metabolic disease, RA, osteoporosis, prolonged history of steroid use, spinal infection etc.) 4. Patient with evidence of CNS involvement 5. Patient with vertebro-basilar syndrome 6.Patient undergone cervical surgeries 7. Patient with bilateral UE symptoms 8. Traumatic injuries to upper limb and cervical spine 9. Dizziness 10. Circulatory disturbance in UE 11. Known history of high level spinal cord injury & malignancy 12.Central pain syndrome (e.g. Fibromyalgia) 13. Limitation of glenohumeral joint, elbow joint or wrist constraining standard performance of neurodynamic test.

Data analysis

Data analysis was done by using SPSS 14.0 and Graph Pad 6.7 version. All the calculations were done at 5% level of significance

Observations

Forty eight (80%) subjects were in the age group of 30-40 yrs, and 12(20%) were more than 40 years. The mean age of the subjects was 38.16 ± 3.87. There were 11(20.33%) males and 40 (66.66%) females. Occupation wise distribution of subjects showed that majority were housewives 49(93.66%), followed by Clerk 12(20%) followed by others. (Table 1)

Table 1: Demography and occupation of subjects

N - 60		
Mean ± SD		38.16±3.87
Age	30-40	48(80%)
	41-50	12(20%)
Gender	Male	11(20.33%)
	Female	40(66.66%)
Occupation	Housewife	49(93.66%)
	Clerk	12(20%)
	Painter	3(5%)
	Teacher	10 (16.66%)
	Farmer	3 (5%)
	Car Painter	6 (10%)
	Bank officer	6 (6.66%)
	Telephone operator	2 (3.33%)
	Mechanic	10(6.66%)

Discussion

Allander [4] in his series reported prevalence of cervical radiculopathy increases from 3% in general population to 19% in the age group 30-60 years.

Kivi [5] reported at mean age as 43 years in his series. Geoffroy *et al*. [6] reported common age group in their series of cervical radiculopathy between 30-50 years with mean age group 42 years. The findings of the present study are more or less similar to the findings of all the above workers [4, 5, 6]. The occurrence of the cervical radiculopathy in the adult and late age group between 40-60 years could be explained on the basis that physical activity and natural age related changes starts occurring in this age group.

Allander [4] reported that this condition is more common in women as compared to male. However, Geoffory *et al*. [6], Hamilton [7] and Waugh *et al*. [8] reported that cervical radiculopathy is equally common in both male and women. The present findings shows similar findings with Geoffory *et al*, Hamilton and Waugh *et al* Therefore the present study shows that it is not specific for any gender, however it is work related and age more commonly affected.

Binder *et al*. reported that 51% attributed symptoms to a specific cause or activity for example household activities, working with tools, lifting and carrying heavy weights, faulty posture and sports.

Kivi reported occupation played an important role in the etiology of cervical radiculopathy. Spontaneous occurrence in persons used to repeated monotonous movement at work and isometric over exhaustion is the risk for the development of cervical radiculopathy.

Note boom *et al*. in their series reported work related common association of activities. Fillion reported over use that results from repetitive motion of upper extremities prone to develop cervical radiculopathy.

Haahr and Andersen assessed physical exposure at work. They classified 2 categories. Strenuous work or non strenuous work. Strenuous group included carpenters, wood workers, farmers, drivers, cleaners and non strenuous workers included teachers, nurses and office assistants.

Physical work factors in these cases involve repetitive monotonous movements forceful work extreme posture, static role and handling of vibrating objects exposes the subjects to high risk. This finding of present study is similar to with Kivi, Binder *et al.* and Haahr and Anderson.

Thus the present study believe that the repetitive monotonous spontaneous movements leads to injury to The most severe injuries and greatest wear and tear occur between C4 and C7. The nerve roots passing through the intervertebral foramina in these areas are C5, C6 and C7. Uncovertebral articulations (also known as joints of Luschka) are present in the C3-7 spinal segments, located on the posterolateral border of the intervertebral disc and in the anteromedial portion of the intervertebral foramen. These articulations are not true synovial joints, but can hypertrophy associated with disc degeneration, and result in narrowing of the intervertebral foramen. This foraminal narrowing is a common cause of cervical radiculopathy [9, 10].

Similarly Waugh *et al*. in their study reported that cervical

radiculopathy typically affect the dominant arm. Haar and Andersen in their study observed that among 209 cases 129(61.7%) had cervical radiculopathy in females as compared to males 69(33.0%) on left side and 11(5.3%) on both sides. A total of 189(90.4%) were females, 15(7.2%) were males and 5(2.4%) indicated using both hand equally well.

Haar and Anderson opined that cervical radiculopathy occurs in those who having monotonous repetitive work task during at least half of the early time in last few years among women but not in men. However they agreed that most of the physical job characteristics were associated with pain in neck with radiculating to upper limb. Among women the risk of cervical radiculopathy increase with increasing daily exposure time to work with the arm lifted in front of the body and working with the head bend. Similar opinions were expressed by Waugh *et al*, Haar and Anderson and Cleland *et al*.

Conclusion

Thus the present study also believed that cervical radiculopathy commonly occurs in females due to their repetitive house hold works and strenuous activity.

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