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Research Article

AN OBSERVATIONAL STUDY TO ASSESS *SAMPRAPTI GHATAKA* IN CERVICAL SPONDYLOSIS WITH SPECIAL REFERENCE TO RADIOLOGICAL FINDINGS

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ABSTRACT
The western lifestyle, characterized by convenience food, television and PC's taking its all on children as well as adults and is producing increased number of overweight, passive youngsters with lifestyle diseases. Spondylosis is degenerative inter vertebral disc with secondary proliferative osteoarthritis. Disc spaces collapse and associated ligament thickening and bony proliferation result in nerve root compression and narrowing of spinal canal. Cervical spondylosis which is a degenerative disorder in which structural and also functional derangements take place. It is an age related and also work-related disability usually found in the 30-60 years of age group. According to *Ayurveda* it is one among the *Vataja Nanatmaja Vikara*. There is no exact clinical entity mentioned in classics like cervical spondylosis, but it can be compared *to Greevastambha, Apabahuka, Vishwachi Manyastamba, Manyagraha, Shirograham, Greevahundanam, Greevasandhigatavata.* Cervical Spondylosis also known as cervical osteoarthritis or neck arthritis, is a common age-related condition that affects the joints and discs in our neck.

INTRODUCTION
In the current busy world, where in the people take on long drives by vehicles; who work for long hours in front of computers; doing night outs like in call centers; who sit in front of television for long hours; who has got abnormal postures of sitting, sleeping over abnormally soft mattress and pillows; who give least importance to proper physical and mental exercises; food habits etc. are all can be considered as the present /future victims for Cervical Spondylosis, one of the common cause of neck pain. To say it in short and precise way, the modified, restless, sedentary, sophisticated lifestyle of the so called modernized world has resulted in its rise which has made the world to look over it for its remedy.

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Cervical spondylosis is a degenerative disorder involving the disc of cervical spine and joints of cervical region.[1]

Faulty dietetic habits and irregular lifestyle is responsible for early degenerative changes in bodily tissue and play a vital role in the manifestation of such Degenerative disorder. In this way, this disease is now becoming a significant threat to the working population.

Prevalence Rate
In the males, the prevalence rate is 100% by the age of 70 years and 96% in women older than 70 years about 60 to 70% of women and 85% of men show changes related with cervical spondylosis.[2] 23.6% patients presenting with non-traumatic myelopathic symptoms have cervical spondylosis. This is the cause for non-traumatic spastic Paraparesis and Quadriparesis. The prevalence of cervical spondylotic myelopthy ranges between 96%-100%, by the age 70 years in females and males respectively. By age 60, 70% of women and 85% of men show changes consistent with cervical spondylosis on X-ray.

Cervical Spondylosis is a degenerative condition of the cervical spine where it may lead to cervical spondylotic myelopathy. The main pathology is found primarily in the inter vertebral discs and vertebral bodies. It leads to pain and stiffness in neck, radiating pain into arm, headache, vertigo, giddiness, paraesthesia, numbness etc. In Cervical spondylosis, patient complaints of pain in the neck that may radiate in the distribution of affected nerve root. Paraesthesia and sensory loss may be found in affected segments and there may be lower motor neuron signs including weakness, wasting and reflex impairment.[3] It disturbs the daily routine and over all life of the patient. Though it is not fatal instantly but it causes more severe complications in later stages. It cripples the patient, makes him a burden to others. Patient will not be able to perform the day to day work properly due to severity of pain. Modern medical science provides various types of medical and surgical therapy but none of the therapy is satisfactory in cervical spondylosis. All the treatments are just for symptomatic relief. Due to more untoward effect of pain relieving drugs ex. NSAID, Steroids and Surgical procedures, in this case Ayurveda may play vital role in curing this disease.

There is no exact clinical entity mentioned in classics like Cervical spondylosis but it probably compared with *Greevagatavata, Greevastambha, Greevaasthigatavata, Apabahuka, Manyastambha, Manyagraha, Vishwachi, Greevahundana, Shirograham.* These diseases are grouped under *Vata vyadhis* which may manifest by *Dhatukshaya or Margavarana* those are classified according to *hetu, sthana, lakshana*. In classification of *Dhatukshaya janya vyadhis* many degenerative conditions are considered and Cervical spondylosis is one among them.[4]

As these conditions are more oriented towards Ayurveda management, this focused us to understand those degenerative conditions in Ayurveda perspective. The present study is intended to establish the *Samprapti ghataka* for Cervical spondylosis.

Osteoarthritis of the cervical spine may produce neck pain that radiates into the back of head, shoulders or arms or may be the source of headaches in the posterior occipital region (supplied by C2-C4 nerve roots) osteophytes disc protrusion or hypertrophic facet or vertebra / joints may alone or in combination compress one or several nerve roots at the inter vertebral foramina.

MRI is the study of choice to define the anatomic abnormalities but plain CT is adequate to assess bony spurs, foraminal narrowing, lateral recess stenosis or OPLL and nerve conduction studies can localize and assess the severity of the nerve root injury.[5]

AIMS & OBJECTIVES

- ✓ To diagnose Cervical Spondylosis based on clinical features and X-ray findings.
- ✓ Establishment of *Sampraptighataka* for Cervical spondylosis.

MATERIALS AND METHODS

Diagnostic criteria

- ✓ Neck pain
- ✓ Stiffness of neck
- ✓ Restricted movements
- ✓ Swelling in neck
- ✓ X-ray of cervical spine, X-ray of the cervical spine is helpful procedure; A lateral view shows the loss of normal lordosis diminution in the disc space and growth of osteophytes. Sometimes canal stenosis can also be demonstrated. An oblique view shows the protruding osteophytes into the inter vertebral foramina. The antero - posterior view a common precipitation does not offer much in the diagnosis of cervical spondylosis.

Selection of Subjects

Inclusion criteria

- ✓ Subjects of either sex between the age group of 20-70 years were selected.
- ✓ Subjects presenting with signs and symptoms of cervical spondylosis were selected.

d) Exclusion criteria

- ✓ Subjects with fracture of cervical spine.
- ✓ Known case of diseases like Cervical TB, Cervical rib, tumors involving spinal cord and its roots, Osteomyelitis.

e) Assessment criteria

Subjective criteria

1. Neck pain
2. Stiffness
3. Clumsy finger movements
4. Pain radiating to Upper limb

Objective criteria

1. Tenderness over cervical region
2. Movements of neck painful / restricted

Study Design

- ✓ 50 subjects who are fulfilled the inclusion criteria were selected for the study.
- ✓ Subjects were examined in detail and symptoms were evaluated.
- ✓ X-ray of cervical spine AP lateral of each patient were taken to assess the radiological changes.

- ✓ Study is conducted to establish *Sampraptighataka* in cervical spondylosis.
- ✓ Obtained results from above examinations and investigations are critically analyzed to establish *Samprapti Ghataka*.

Statistical analysis

- ✓ Data collected was entered in MS-Excel and analyzed using SPSS version 23.
- ✓ Data is represented as tables & graphs as relevant.
- ✓ Chi square test was applied for the data to assess the association between subjective & objective parameters.
- ✓ Obtained results were interpreted statistically significant at p<0.05.

Discussion on Radiological findings

Symptom		Osteophyte Changes		Total	Chi Square	'P' Value
		Present	Absent			
Restricted Movement	Present	19	5	24	6.019	0.014
	Absent	26	0	26		

Among 50 subject's 36 subjects have both osteophytic changes and radiating pain, but in 9 subjects only osteophytic changes seen whereas radiating pain was absent. It shows that there was a significant association between radiating pain and osteophytic changes with the 'p' value <0.05 i.e., 0.047. Radiological finding of osteophytic changes proves and helps in understanding the pathogenesis of a disease cervical spondylosis.

Symptom		Osteophyte Changes		Total	Chi Square	'P' Value
		Present	Absent			
Swelling in neck	Present	8	3	11	4.675	0.031
	Absent	37	2	39		

Among 50 subjects 8 subjects have both osteophytic changes and swelling in neck, but in 37 subjects only osteophytic changes seen whereas swelling in neck was absent. It shows that there was a significant association between swelling in neck and osteophytic changes with the 'p' value <0.05 i.e., 0.031. Radiological finding of osteophytic changes proves and helps in understanding the pathogenesis of a disease cervical spondylosis.

Symptom		Osteophyte Changes		Total	Chi Square	'P' Value
		Present	Absent			
Stiffness in neck	Present	18	03	21	0.739	0.039
	Absent	27	02	29		

Among 50 subjects 18 subjects have both osteophytic changes and stiffness in the neck, but in 27 subjects only osteophytic changes seen whereas stiffness was absent. It shows that there was a significant association between stiffness in neck and osteophytic changes with the 'p' value <0.05 i.e., 0.039.

Symptom		Osteophyte Changes		Total	Chi Square	'P' Value
		Present	Absent			
Swelling Neck	Present	3	8	11	1.333	0.024
	Absent	5	34	39		

Among 50 subjects 8 subjects have both narrowing of disc space and swelling in neck, but in 34 subjects only narrowing of disc space seen where as swelling in neck was absent. It shows that there was significant association between swelling in neck and narrowing of disc space with the 'p' value <0.05 i.e., 0.024.

Symptom		Intervertebral Disc Space		Total	Chi Square	'P' Value
		Normal	Abnormal			
Restricted Movement	Present	4	20	24	0.015	0.024
	Absent	4	22	26		

Among 50 subjects 20 subjects have both narrowing of disc space and restricted movements in neck, but in 22 subjects only narrowing of disc space seen where as restricted movements of neck was absent. It shows that there was significant association between restricted movements and narrowing of disc space with the 'p' value <0.05 i.e., 0.024.

Symptom		Intervertebral Disc Space		Total	Chi Square	'P' Value
		Normal	Abnormal			
Stiffness in Neck	Present	3	18	21	0.079	0.03
	Absent	5	24	29		

Among 50 subjects 18 subjects have both narrowing of disc space and stiffness in neck, but in 24 subjects only narrowing of disc space seen where as stiffness in neck was absent. It shows that there was significant association between stiffness in neck and narrowing of disc space with the 'p' value <0.05 i.e., 0.03.

Symptom		Loss of Lordosis		Total	Chi Square	'P' Value
		Present	Absent			
Radiating Pain	Present	14	24	38	1.729	0.014
	Absent	7	5	12		

Among 50 subjects 14 subjects have both the loss of lordosis and radiating pain, but in 7 subjects only loss of lordosis seen whereas radiating pain was absent. It shows that there was significant association between radiating pain and loss of lordosis with the 'p' value 0.014.

Symptom		Loss of Lordosis		Total	Chi Square	'P' Value
		Present	Absent			
Swelling in neck	Present	4	7	11	0.184	0.02
	Absent	17	22	39		

Among 50 subjects 4 subjects have both the loss of lordosis and swelling in neck, but in 17 subjects only loss of lordosis seen whereas swelling in neck was absent. It shows that there was significant association between swelling in neck and loss of lordosis with the 'p' value 0.02.

Symptom		Loss of Lordosis		Total	Chi Square	'P' Value
		Present	Absent			
Restricted Movement	Present	11	13	24	0.278	0.04
	Absent	10	16	26		

Among 50 subjects 11 subjects have both the loss of lordosis and restricted movements, but in 10 subjects only loss of lordosis seen whereas restricted movements were absent. It shows that there was significant association between restricted movements and loss of lordosis with the 'p' value 0.04.

Symptom		Loss of Lordosis		Total	Chi Square	'P' Value
		Present	Absent			
Stiffness In neck	Present	11	10	21	1.602	0.03
	Absent	10	19	29		

Among 50 subjects 11 subjects have both the loss of lordosis and stiffness in neck, but in 10 subjects only loss of lordosis seen whereas stiffness in neck was absent. It shows that there was significant association between stiffness in neck and loss of lordosis with the 'p' value 0.03.

Symptom		Sclerosis		Total	Chi Square	'P' Value
		Present	Absent			
Radiating Pain	Present	8	30	38	3.791	0.071
	Absent	6	6	12		

Among 50 subjects 8 subjects have both the sclerosis and radiating pain, but in 6 subjects only sclerosis seen where as radiating pain was absent. It shows that there was significant association between radiating pain and sclerosis with the 'p' value 0.071

Symptom		Sclerosis		Total	Chi Square	'P' Value
		Present	Absent			
Swelling Neck	Present	7	4	11	8.884	0.03
	Absent	7	32	39		

Among 50 subjects 7 subjects have both the sclerosis and swelling in neck, but in 7 subjects only sclerosis seen where as swelling in neck was absent. It shows that there was significant association between swelling in neck and sclerosis with the 'p' value 0.03.

Symptom		Sclerosis		Total	Chi Square	'P' Value
		Present	Absent			
Restricted Movements	Present	7	17	24	0.031	0.045
	Absent	7	19	26		

Among 50 subjects 7 subjects have both the sclerosis and restricted movements, but in 7 subjects only sclerosis seen where as restricted movements was absent. It shows that there was significant association between restricted movements and sclerosis with the 'p' value 0.045.

Symptom		Sclerosis		Total	Chi Square	'P' Value
		Present	Absent			
Stiffness Neck	Present	9	12	21	3.964	0.046
	Absent	5	24	29		

Among 50 subjects 9 subjects have both sclerosis and restricted movements, but in 5 subjects only sclerosis seen where as stiffness in neck was absent. It shows that there was significant association between stiffness in neck and sclerosis with the 'p' value 0.046.

Symptom		Vertebral Alignment		Total	Chi Square	'P' Value
		Normal	Abnormal			
Radiating Pain	Present	28	10	38	0.223	0.667
	Absent	8	4	12		

Among 50 subjects 10 subjects had abnormal vertebral alignment with radiating pain but in 4 subjects only abnormal vertebral alignment happened but radiating pain was absent. It shows that there was no significant association between radiating pain and vertebral alignment with the 'p' value 0.667.

Symptom		Vertebral Alignment		Total	Chi Square	'P' Value
		Normal	Abnormal			
Swelling In neck	Present	4	7	11	8.884	0.003
	Absent	32	7	39		

Among 50 subjects 7 subjects had abnormal vertebral alignment with swelling in neck but in 7 subjects only abnormal vertebral alignment present but swelling in neck was absent. It shows that there was significant association between swelling in neck and vertebral alignment with the 'p' value 0.003. So in this study radiological finding (vertebral alignment) shows evident in understanding the pathogenesis of disease cervical spondylosis.

Symptom		Vertebral Alignment		Total	Chi Square	'P' Value
		Normal	Abnormal			
Restricted Movement	Present	17	7	24	0.031	0.860
	Absent	19	7	26		

Among 50 subjects 7 subjects had abnormal vertebral alignment with restricted movements but in 7 subjects only abnormal vertebral alignment present but restricted movements was absent. It shows that there was no significant association between restricted movements and vertebral alignment with the 'p' value 0.860.

Symptom		Vertebral Alignment		Total	Chi Square	'P' Value
		Normal	Abnormal			
Stiffness in neck	Present	15	6	21	0.006	0.939
	Absent	21	8	29		

Among 50 subjects 6 subjects had abnormal vertebral alignment with stiffness in neck but in 8 subjects only abnormal vertebral alignment was present but stiffness in neck was absent. It shows that there was no significant association between vertebral alignment and stiffness in neck with 'p' value 0.939 i.e., >0.05.

Symptom		Paraspinal Tissue		Total	Chi Square	'P' Value
		Normal	Abnormal			
Radiating Pain	Present	29	9	38	0.262	0.609
	Absent	10	2	12		

Among 50 subjects 9 subjects had both abnormal paraspinal soft tissue and radiating pain but in only 2 subjects had abnormal paraspinal soft tissue but radiating pain was absent. It shows that there was no significant association between the paraspinal soft tissue and radiating pain with 'p' value 0.609 i.e., >0.05.

Symptom		Paraspinal Tissue		Total	Chi Square	'P' Value
		Normal	Abnormal			
Swelling In neck	Present	9	2	11	0.262	0.609
	Absent	30	9	39		

Among 50 subjects 2 subjects had both abnormal soft tissue and swelling in neck but in 9 subjects only abnormal paraspinal soft tissue present but swelling in neck was absent. It shows that there was no significant association between the paraspinal soft tissue and swelling in neck with 'p' value 0.729 i.e., >0.05.

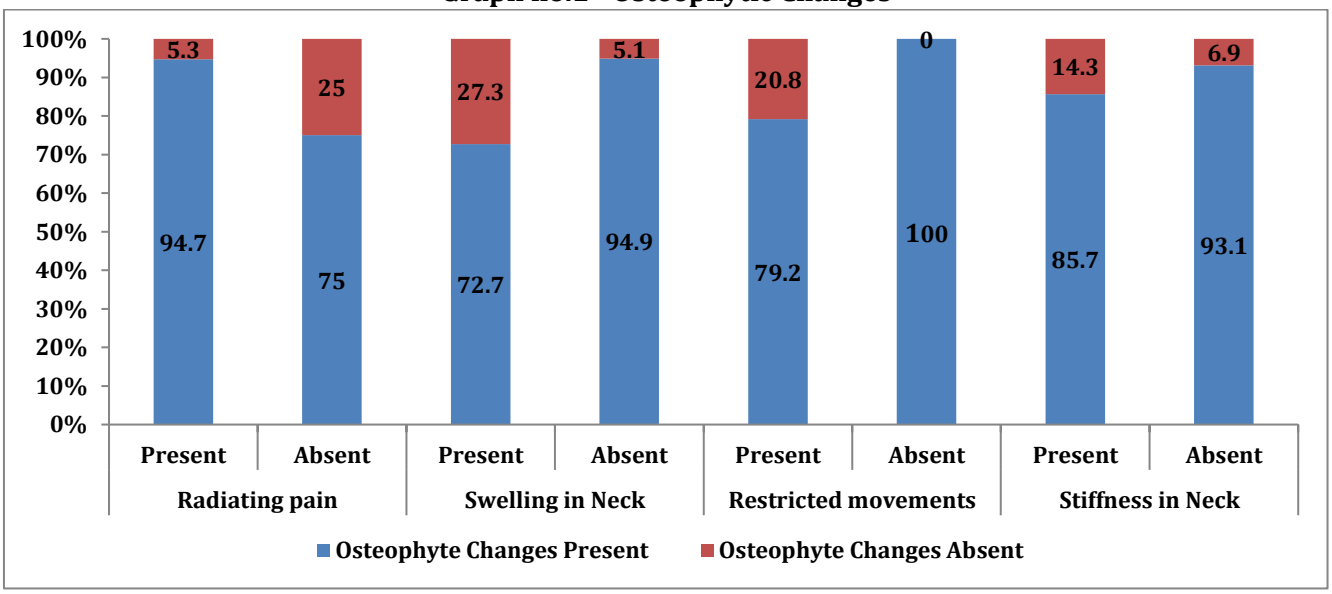
Symptom		Paraspinal Tissue		Total	Chi Square	'P' Value
		Normal	Abnormal			
Restricted Movement	Present	19	5	24	19	5
	Absent	20	6	26		

Among 50 subjects 5 subjects had both abnormal soft tissue and restricted movement but in 6 subjects only abnormal paraspinal soft tissue present but restricted movements were absent. It shows that there was no significant association between paraspinal soft tissue and restricted movements with 'p' value 0.848 i.e., >0.05.

Symptom		Paraspinal Tissue		Total	Chi Square	'P' Value
		Normal	Abnormal			
Stiffness In neck	Present	18	3	21	1.256	0.262
	Absent	21	8	29		

Among 50 subjects 3 subjects had both abnormal soft tissue and stiffness in neck and in 8 subjects only abnormal paraspinal soft tissue was present but stiffness in neck was absent. It shows that there was no significant association between abnormal paraspinal soft tissue and stiffness in neck with 'p' value 0.262 i.e., >0.05.

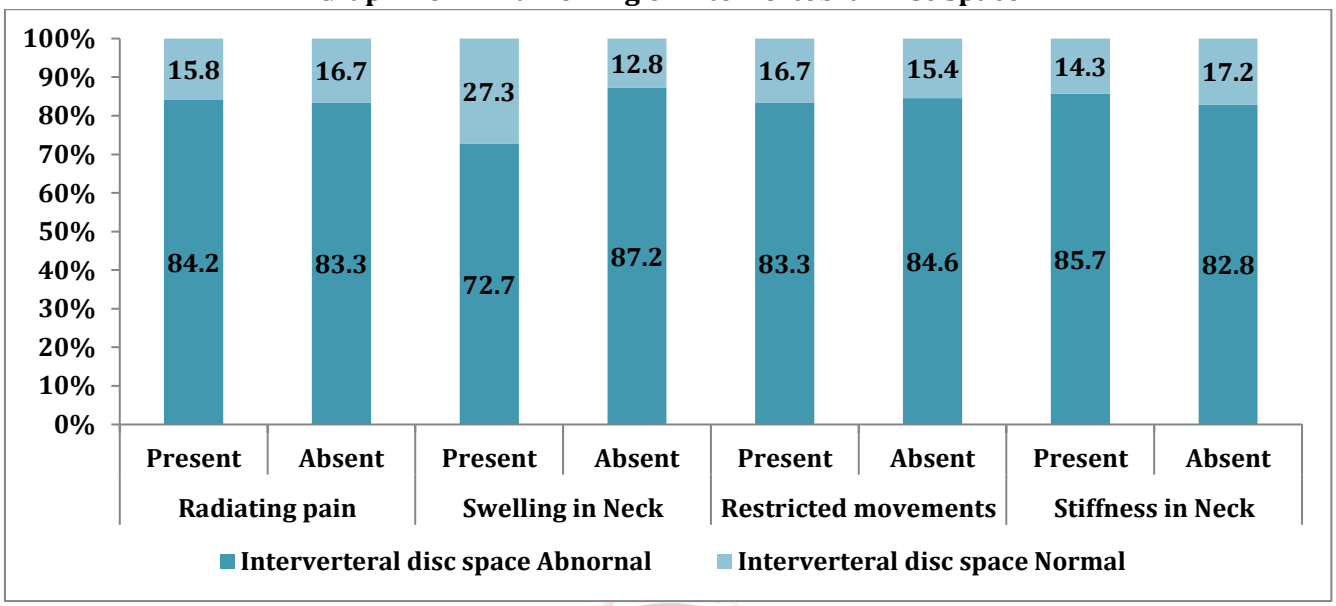
Graph no.1 - Osteophytic Changes



- ✓ From the graph it can be observed that 94.7% of subjects with radiating pain had osteophytic changes, whereas only 75% subjects without radiating pain had osteophytic changes, with 'p' value 0.047.
- ✓ From the graph it can be observed that 72.7% of subjects with swelling in neck had osteophytic changes, whereas 94.9% subjects without swelling in neck had osteophytic changes, with 'p' value 0.031.

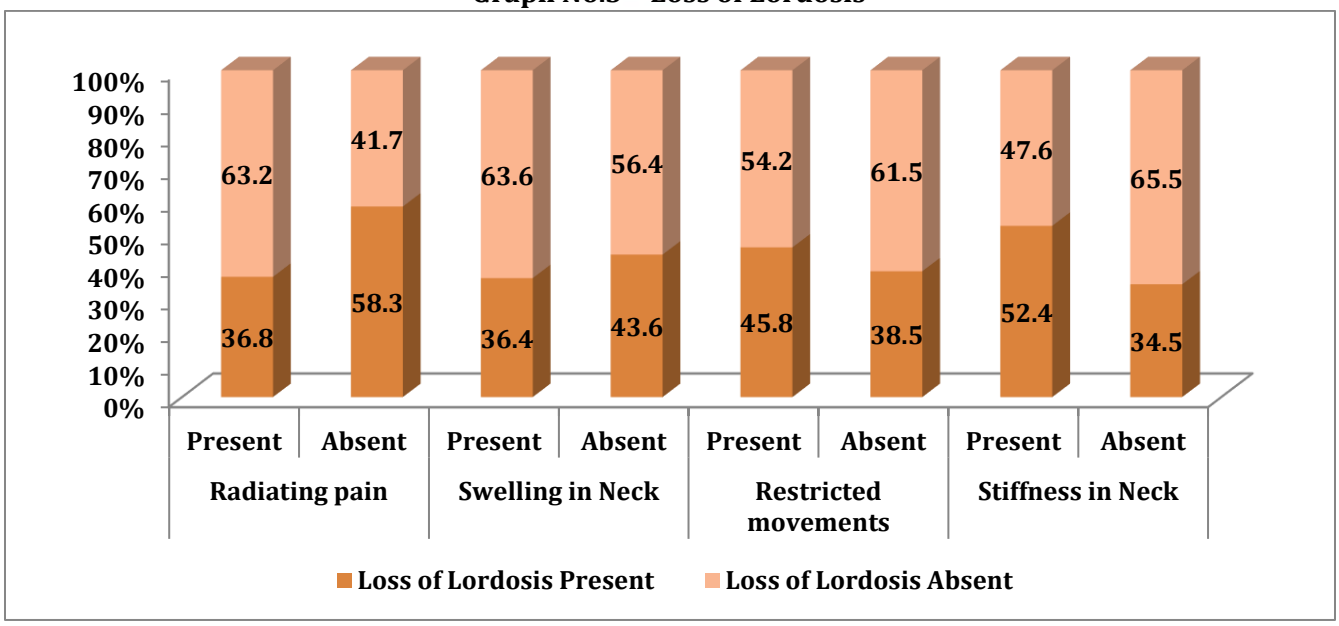
- ✓ From the graph it can be observed that 79.2% of subjects with restricted movements had osteophytic changes, whereas 100% subjects without restricted movements in neck had osteophytic changes, with 'p' value 0.014
- ✓ From the graph it can be observed that 85.7% of subjects with stiffness in neck had osteophytic changes, whereas 93.1% subjects without stiffness in neck had osteophytic changes with 'p' value 0.390.

Graph No.2 – Narrowing of Intervertebral Disc Space



- ✓ From the graph it can be observed that 84.2% of subjects with radiating pain had narrowing of disc space, where as 83.3% of subjects without radiating pain had narrowing of disc space.
- ✓ From the graph it can be observed that 72.7% of subjects with swelling in neck had narrowing of disc space, where as 87.2% subjects without swelling in neck had narrowing of disc space.
- ✓ From the graph it can be observed that 83.3% of subjects with restricted movements had narrowing of disc space, where as 84.6% subjects without restricted movements had narrowing of disc space.
- ✓ From the graph it can be observed that 85.7% of subjects with stiffness in neck had narrowing of disc space, where as 82.8% subjects without stiffness in neck had narrowing of disc space.

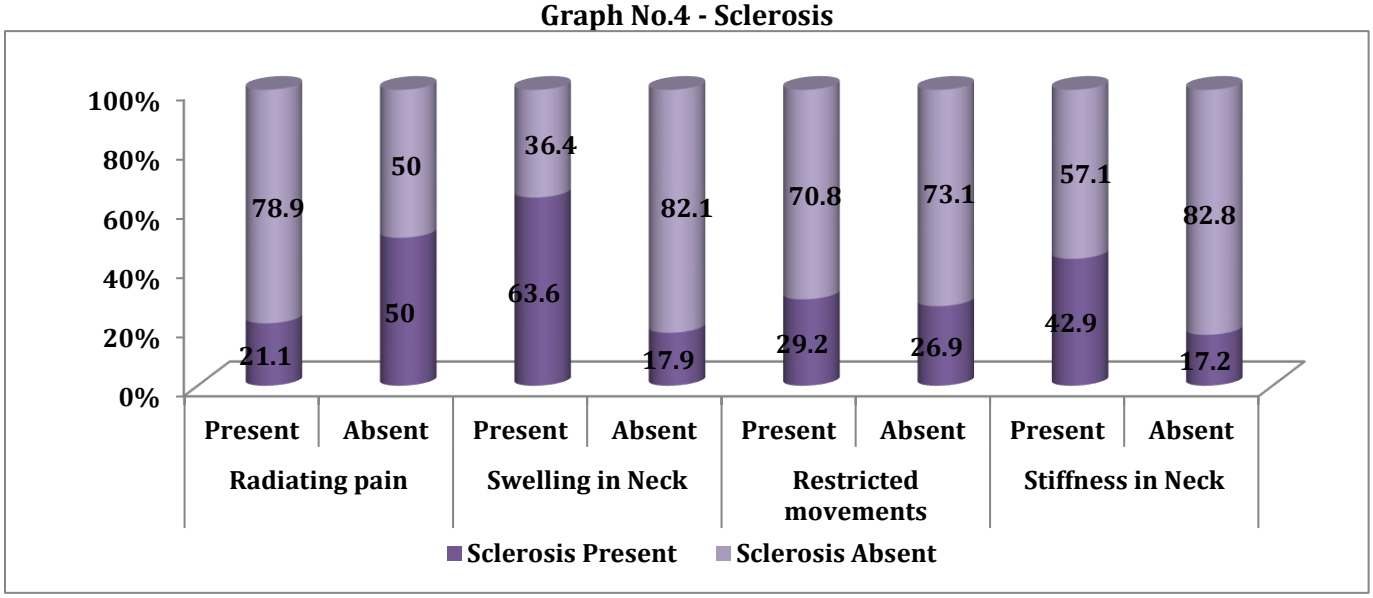
Graph No.3 – Loss of Lordosis



- ✓ From the graph it can be observed that 36.8% of subjects with radiating pain had loss of lordosis, where as 58.3% subjects without radiating pain had loss of lordosis.
- ✓ From the graph it can be observed that 36.4% of subjects with swelling in neck had loss of lordosis, where as 43.6% subjects without swelling in neck had loss of lordosis.

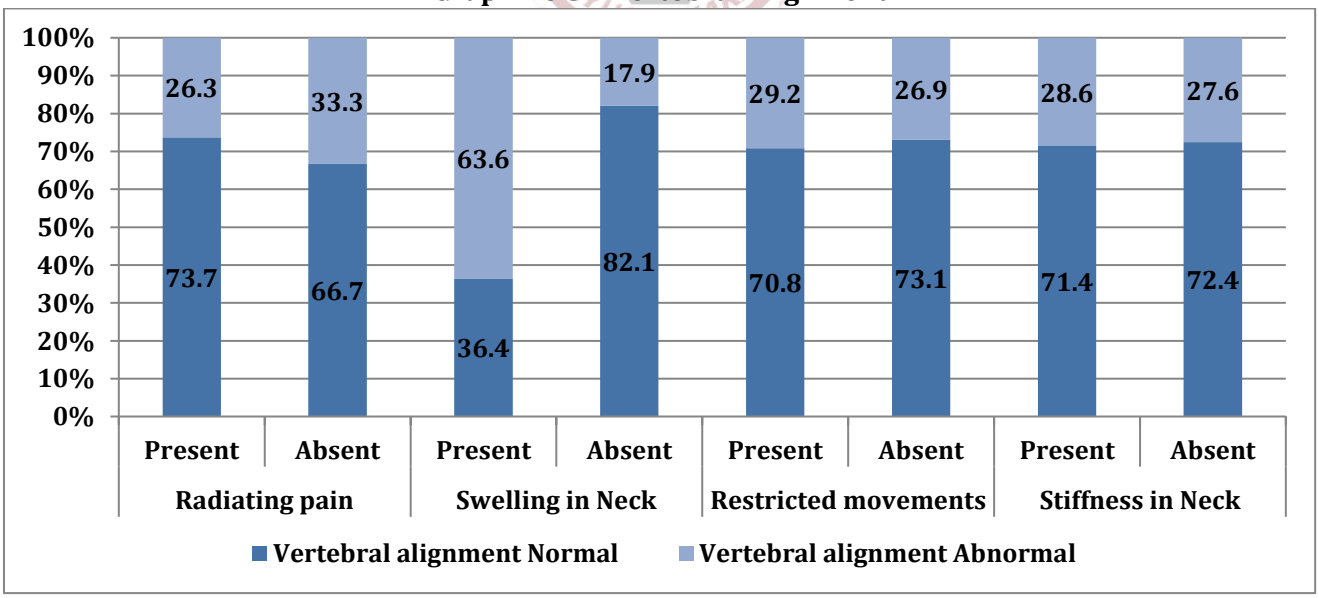
- ✓ From the graph it can be observed that 45.8% of subjects with restricted movements had loss of lordosis, where as 38.5% subjects without restricted movements had loss of lordosis.
- ✓ From the graph it can be observed that 52.4% of subjects with stiffness in the neck had loss of lordosis, where as 34.5% subjects without stiffness in neck had loss of lordosis.

Graph No.4 - Sclerosis



- ✓ From the graph it can be observed that 21.1% of subjects with radiating pain had sclerosis, where as 50% subjects without radiating pain had sclerosis with 'p' value 0.071.
- ✓ From the graph it can be observed that 63.6% of subjects with swelling in neck had sclerosis, where as 17.9% subjects without swelling in neck had sclerosis with 'p' value 0.003.
- ✓ From the graph it can be observed that 29.2% of subjects with restricted movements had sclerosis, where as 26.9% subjects without restricted movements had sclerosis with 'p' value 0.860.
- ✓ From the graph it can be observed that 42.9% of subjects with stiffness in neck had sclerosis, where as 17.2% subjects without stiffness in neck had sclerosis with 'p' value 0.046.

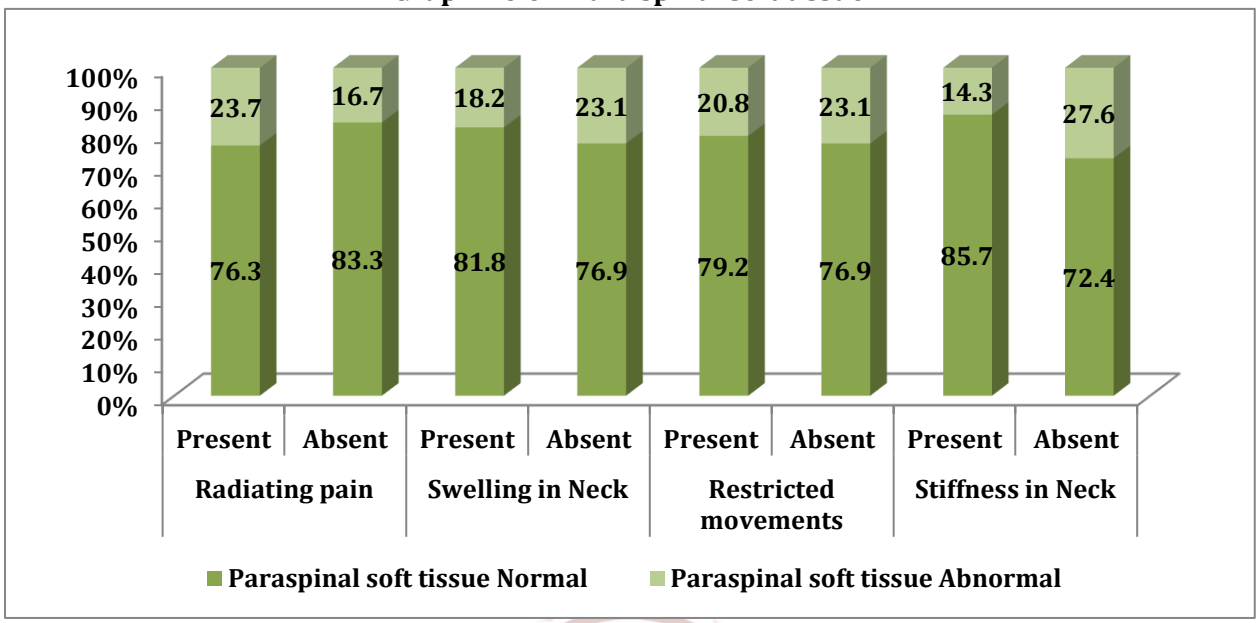
Graph No.5 – Vertebral Alignment



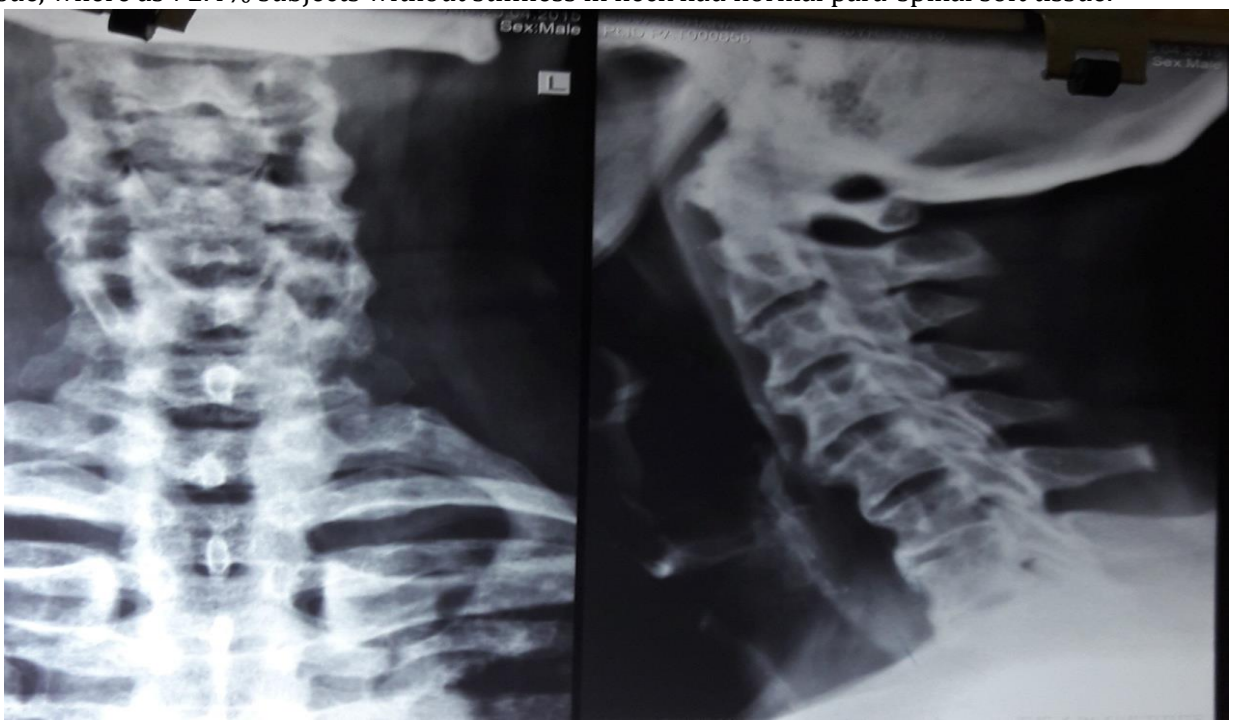
- ✓ From the graph it can be observed that 73.7% of subjects with radiating pain had normal vertebral alignment, where as 66.7% of subjects without radiating pain had normal vertebral alignment 'p' value 0.637.
- ✓ From the graph it can be observed that 36.4% of subjects with swelling in neck had normal vertebral alignment, where as 82.1% subjects without swelling in neck had normal vertebral alignment with 'p' value 0.003.

- ✓ From the graph it can be observed that 70.8% of subjects with restricted movements had normal vertebral alignment, where as 73.1% subjects without restricted movements had normal vertebral alignment with 'p' value 0.860.
- ✓ From the graph it can be observed that 71.4% of subjects with stiffness in the neck had normal vertebral alignment, 72.4%subjects without stiffness in neck had normal vertebral alignment with 'p' value 0.939.

Graph No.6 – Para spinal soft tissue



- ✓ From the graph it can be observed that 76.3% of subjects with radiating pain had normal para-spinal soft tissue, where as 83.3% subjects without radiating pain had normal para-spinal soft tissue.
- ✓ From the graph it can be observed that 81.8% of subjects with swelling in neck had normal para-spinal soft tissue, where as 76.9% subjects without swelling in neck had normal para-spinal soft tissue.
- ✓ From the graph it can be observed that 79.2% of subjects with restricted movements had normal para-spinal soft tissue, where as 76.9% subjects without restricted movements had normal para-spinal soft tissue.
- ✓ From the graph it can be observed that 85.7% of subjects with stiffness in neck had normal para-spinal soft tissue, where as 72.4% subjects without stiffness in neck had normal para-spinal soft tissue.



X-ray of Cervical spondylosis

Discussion on Radiological Findings

In this study 90% subjects showed osteophytic changes in cervical spine. It can be co-related to *Adhyasthi* (extra bone) more growth which is one of the *Asthivruddi Lakshana* mentioned by *Acharya Sushruta.* But this *Vruddhi* is happening pathologically which may be due to *Vata Dosha* leading to improper formation and growth in bones, as *Asthi* and *Vata* are closely related.

Inter-Vertebral Disc Spaces

In this study observed 84% subjects showing the narrowing of disc spaces in cervical spine. Discs are made up of strong connective tissue with outer layer of annulus fibrosis and inner nucleus pulposus, which is a gel like substance. With age or causative factors space of the disc loses water content gets dehydrated and conflict nerve and causes pain, which can be compared to *Srotodushti Snehadi Guna Shunyata* i.e., *Shleshmaka Kapha Kshaya.* This may be attributed to increased *Ruksha Guna* of *Vata* and thus causing *Snigda Guna Kshaya* i.e., *Kapha Kshaya* which can be understood that local *Sandhigata Kapha-Shleshaka Kapha* undergoes *Kshaya* thus causing changes in the Inter vertebral disc space i.e., reduction in the space.

Loss of Lordosis

In this study observed 60% of subjects showing loss of lordosis in cervical spine. *Chakrapani* while explaining *Greevahundana* he has given meaning as inward contracture of the head and its allied parts, which is possible due to implication with cervical parts. This condition is suggestive of the structural deformity. It can be compared to *Vyanavata Prakopa* leads to variation in *Gati Prasarana, Akunchana, Nimeshana kriya.*

Sclerosis

In this study observed 72% subjects showing sclerosis in cervical spine. Sclerosis is a bone condition characterized by abnormal hardening of the bone and an elevation in bone density. It can be compared to *Sthanika Vata Dosha Prakopa* in *Greeva Pradesha* because *Vatadosha* is *Aashrayi bhava* for *Asthi dhatu.*

Vertebral Alignment

In this study vertebral alignment of 90% subjects were normal. Though there may be structural changes found in Cervical Spondylosis, they may be attributed to structural changes brought about in *Asthi Dhatu* by *Vata Dosha* majorly. Even then, other supporting *Dhatu* might have kept the alignment of cervical spine normal. This may be interpreted as in most cases of Cervical Spondylosis – The *Dosha* and *Dhatu Dushti* is not so severe to bring about changes in *Samhanana Avastha* of any structure.

Para spinal Soft Tissue

In this study observed 78% subjects having normal para spinal soft tissue.12% subjects show abnormality in soft tissue i.e. muscle spasm or atrophy which can be compared to *Mamsa Kshaya* and *Mamsa Dushti* due to chronicity.

Compression of Exiting Nerve Roots

In this study, 34% of subjects were showing this feature. This feature explains chronicity in most cases. Nerve root compression causes radiculopathy pain in upper arm may be both or either. This is explained as *Vishwachi* in *Samhita* as pain in arm along with *Karma Kshaya, Stambha, Toda.*[6,7] *Cheshtapaharana* of *Bahu.*[8] This may be understood as the next stage, as the condition might progress to further pathological changes leading to Radiculopathy due to nerve root impairment.

Based on the observations done, disease understanding and detailed analysis done, *Sampraptighataka* for the condition of cervical spondylosis, may be derived as follows.

Dosha – *Vyanavata- Gunata Vriddhi- Ruksha Guna Karmata Kshaya***–** decrease in movements

Kapha- Shleshmaka Kapha **–** *Gunata Kshaya-Karmata Kshaya*

Dushya – *Dhatu* these are *Rasa, Rakta, Mamsa, Asthi*

Upadhatu **–** *Khandara, Snayu*

Agni – *Jatharagni*

Agnidushti **–** *Agnimandya* or *Vishamagni*

Ama – *Agnimandyajanya Ama*

Srotas – *Rasavaha*

Srotodushti – *Sanga*

Udbhavasthana– In case of *Nija vyadhi* **–** *Pakvashaya*

In case of *Agantujavyadhi* **–** *Greeva*

Sancharasthana – *Sarvashareera*

Vyaktasthana – *Greeva*

Rogamarga – *Madhyama*

Svabhava – *Chirakari*

to radiculopathy due to nerve root impairment.

CONCLUSION

- ✓ Occupational and physical stress and strain plays prime role in the causation of disease.
- ✓ Radiological findings like osteophytic changes, narrowing of inter-vertebral disc space were seen in 95% of the subjects and loss of lordosis, sclerosis, abnormal vertebral alignment and para-spinal soft tissue were seen in the minimum subjects i.e.25% these findings helps in the

diagnosis and understanding the pathogenesis of disease cervical spondylosis. This study proves that radiological findings are an essential tool in establishment of *Sampraptighatakas* of cervical spondylosis.

- ✓ There was no classical reference of disease which can be co-related to cervical spondylosis but on the basis of core pathogenesis and classical symptoms i.e., *Vatapoornata, Dhrutisparsha, Shotha, Prasarana Aakunchana Pravrittishcha Vedana* (Pain during flexion and extension of cervical spine) apart from these *Asthishosha, Asthishoola, Sandhishoola, Asvapna, Satataruk* by considering these features it is co-related to *Greeva sandhigatavata*.
- ✓ The *Dushyas* such as *Asthi, Mamsa, Majja and Asthivaha, Mamsavaha, Majjavaha srotas* plays vital role in the pathology of the disease *Greeva Sandhigatavata.*

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