

**STUDY OF ANATOMICAL CHANGES IN CERVICAL SPINE IN VISWACHI W.S.R TO
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ABSTRACT

Vishwachi is disorder affecting upperlimb. It is identified by radiating pain all through the limb and dysfunction of that limb. *Ansha shosha* can be considered as a next stage of *Vishwachi*. In the disease description no where separate *viswachi* causes pathogenesis symptoms and prognosis are available. So, generally *vatavyadhi nidana* etc. are adopted for *viswachi*. In *vishwachi* disease in the anatomical changes in cervical spine concludes that upper limbs hampers the normal routine life. Radiating pain is main symptom of this disease. As pain follows dysfunction, this results in impairment of activities affecting the individuals activities. The detailed anatomy of cervical spine (*griva kasheruka*) is not mentioned in ayurveda. Due to similarity of signs and symptoms of *vishwachi* and cervical spondylosis; these both diseases can be correlated with each other. The present study of *vishwachi* is limited to the cervical spine lesions. The degenerative diseases of the cervical spine, cervical spondylosis is clinically correlated with *Vishwachi* of *vatavyadhi*. Cervical spondylosis is a chronic progressive degenerative disease. The incidence of cervical spondylosis is becoming much more now a days because of many reasons. This was observational study. 100 patients having classical signs and symptoms of *vishwachi* were taken. Assessment were done by specially prepared case record forms of every patient to meet all baseline requirements. After assessing the patients of cervical spondylosis, anatomical changes in the cervical spine were studied with the help of x-ray cervical spine (AP/LAT), MRI, CT of cervical spine. From this study, it is concluded that symptoms of *Vishwachi* can be correlated with the symptoms of Cervical spondylosis. This includes anatomical changes in cervical spine in *vishwachi*. Anatomical changes seen in 100 patients of *Vishwachi* in which reduced disc space in 34% of patient osteophytes formation in 42%, vertebral compression in 72%, spinal canal stenosis seen in none. The observations of the study include demographic data, disease specific data i.e., pain, and sensory symptoms affected segments etc. As these changes are degenerative and cause in the phase of *vata dosha Pradhan avasta* of life by knowing them precautions to avoid these are beneficial for the degenerative condition taken up in the study. These provide more accurate diagnosis of specific nerve root involvement.

KEYWORDS: *Vishwachi*, cervical spondylosis, cervical spine *vatavyadhi*.**INTRODUCTION**

Ayurveda can be defined as a system which uses the inherent principles of nature, to help maintain health in a person by keeping the individuals body, mind and spirit in perfect equilibrium with nature. In the present era people are affected with various disorders. Due to modern lifestyle, lack of self awareness and lack of time. Many diseases are caused by sedentary lifestyle like in clerks drivers, computer users etc. In these cases normal posture of spine is not maintained, due to this reasons diseases of cervical spine are increasing day by day. In ayurveda, *Sushrat* has described the disease *vishwachi* with its treatment,^[1] which is very useful in cervical spondylosis.

The detailed anatomy of cervical spine (*griva kasheruka*) is not mentioned in ayurveda. Due to similarity of signs and symptoms of *vishwachi* and cervical spondylosis; these both diseases can be correlated with each other. The anatomical changes in cervical spine due to disease *vishwachi* are not clearly described in ayurveda. Hence by elaborating knowledge about anatomy of cervical spine and by defining anatomical changes in cervical spine w.s.r to disease *vishwachi*. Pain is the most complicated area of human experience. Several diseases include pain as an important feature alerting the patient to take action. One of such disease is *Vishwachi*, affecting the upper limbs.^[2]

The study of *vishwachi* is limited to the cervical spine lesions. The degenerative diseases of the cervical spine, cervical spondylosis is clinically correlated with *vishwachi* of *vatavyadhi*.^[3] Cervical spondylosis is a chronic progressive degenerative.^[4] The incidence of cervical spondylosis is becoming much more now a days because of many reasons. It is occurring in more than 90% of adults over the age of 50 years and almost 100% by 70 years. Cervical degenerative disorders lead to a wide spectrum of presentations. Often a subtle mix of axial neck pain, radicular upper extremity dysfunction and even myelopathic states exist. The most frequent reason for seeking medical assistance is arm pain.^[5] The treatment of cervical spondylosis is difficult and absolute cure of this condition is impossible owing to the fact that the underlying structural changes are irreversible and is part of the generalized ageing process. This study includes the understanding of *Vishwachi* disease completely, with respect to cervical spondylosis. Pain being the main symptom (prime feature) of *Vishwachi* requires great attention.^[6]

The detailed anatomy of cervical spine (*GRIVA KASHERUKA*) is not mentioned in ayurveda. Due to similarity of signs and symptoms of *vishwachi* and cervical spondylosis; these both diseases can be correlated with each other. The anatomical changes in cervical spine due to disease *vishwachi* are not clearly described in ayurveda. Hence this study were done by elaborating knowledge about anatomy of cervical spine and by defining anatomical changes in cervical spine i.e (*GRIVA KASHERUKHA*) w.s.r to disease *vishwachi*.

AIM

To study anatomical changes in cervical spine in *Vishwachi* (cervical spondylosis) with the help of x-ray spine (AP/LAT), MRI, CT of cervical spine.

OBJECTIVES

- To correlate signs and symptoms of *Vishwachi* with cervical spondylosism.
- To study the structural changes in the cervical spine in *vishwachi*.

MATERIALS AND METHODS

No of Patients -100.

Study design-observational study

Method of selection of patients

Patients having classical signs and symptoms of Cervical spondylosis compared with *Vishwachi* were selected after clinical & objective examination.

Assessment were done by specially prepared case record forms of every patient to meet all baseline requirements. After assessing the patients of cervical spondylosis, anatomical changes in the cervical spine were studied with the help of x-ray cervical spine. (AP/LAT), MRI,CT of cervical spine

Inclusive Criteria

- The volunteers having age between 30-70 years will be selected for study with respective of gender and community.
- The patients suffering from classical signs and symptoms of *vishwachi*.

Exclusive Criteria

- The patients suffering from other diseases like T.B, heart diseases, HTN cancer and severe illness.
- The patients age less than 30 years and more than 70 years will be excluded from the study.
- Uncontrolled DM, T.B spine, CA of cervical vertebrae history of injury to cervical spine.

Assessment Criteria

Subjective

Symptoms of cervical spondylosis plus Symptoms of *Viswachi* mentioned in the text or practically observed were assessed. Presence or absence of these symptoms will be registered. Different symptoms graded into four grade scales (0-3) on the basis of severity to assess the changes in clinical symptoms of cervical spondylosis Compared with *viswachi*.

- Numbness of hand
- Tingling of hand
- Radiating pain of upper extremities
- Pain in neck

Investigations

Structural changes of cervical spine with the help of X-ray cervical spine (AP/LAT) will be used for the assessment.

X-ray cervical spine AP and LAT will be used for the assessment of anatomical changes in *viswachi* For observations following points to be considered by X-ray cervical spine findings

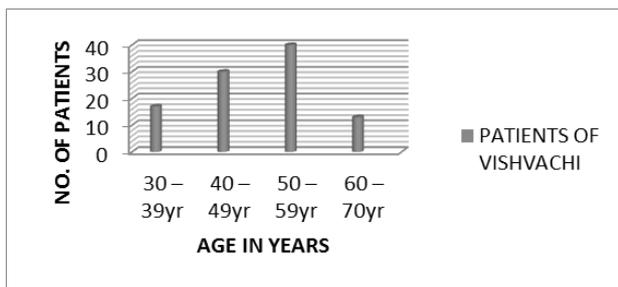
1. Reduced space disc
2. Osteophytes
3. Vertebral compression
4. Spinal canal stenosis
5. Alignment

Structural changes of cervical spine with the help of X-ray cervical spine (AP/LAT) will be used for the assessment

OBSERVATION AND RESULTS

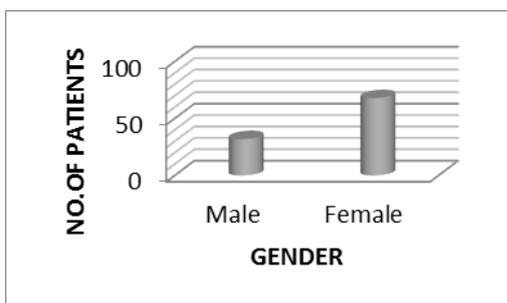
(1) Age wise distribution of 100 patients of *Viswachi*

Graph no 1 -shows that out of the 100 patients 17(17%) patients were of age group 30-39 years have *viswachi*. 30% Patients of age group 40-49 years have *viswachi*. 40% patients of age group 50-59 years also suffering with *viswachi*. 13%patients of age group 60-70 years have *viswachi*. Majority of the patients were of age more than 50 years.



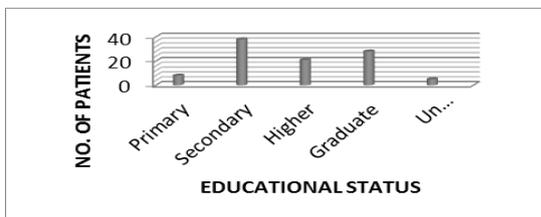
(2) Gender wise distribution of 100 patients of Viswachi

Graph no. 2 shows that out of the 100 patients, 32% patients were male and 68% patients were female. There were more female patients than males.



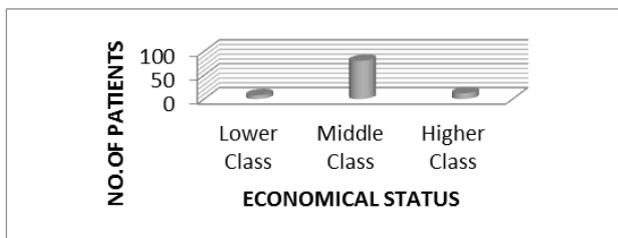
(5) Educational status wise distribution of 100 patients of Viswachi

Out of 100 patients of Viswachi, 8% patients is of primary, 38% patients of secondary, 21% patients of Higher, 28% patients of of graduate, 5% patients of Uneducated.



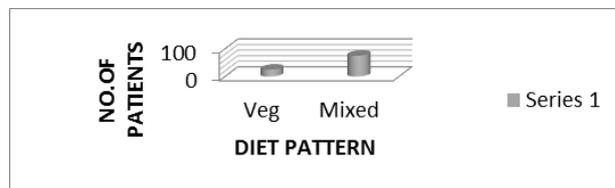
(6) Economical status wise distribution of 100 patients of Viswachi

8% patients belong to Lower Class socio-economic status and 80% patients belong to Middle class socio-economic status, where as 12% patients belong to higher class socio-economic status. Most of the patients were of middle class.



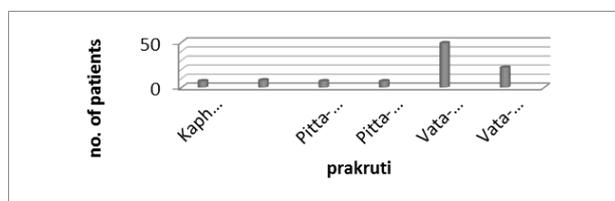
(7) Diet pattern wise distribution of 100 patients of Viswachi

25% patients were vegetarians and 75% patients were taking mixed diet. Maximum numbers of patients diet was of mixed type



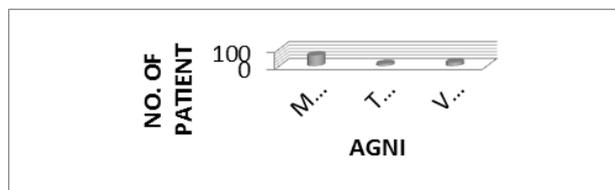
(8) Prakruti wise distribution of 100 patients of Viswachi

Out of 100 patients, 7% patients were Kapha-Pittaj prakruti, 8% were Kapha-Vataj, 7% Pitta-Kaphaj prakruti, 7% Pitta-Vataj prakruti, 49% Vata-Pittaj prakruti, 22% Vata-Kaphaja prakruti maximum numbers of patients were Vata-Pittaj prakruti.



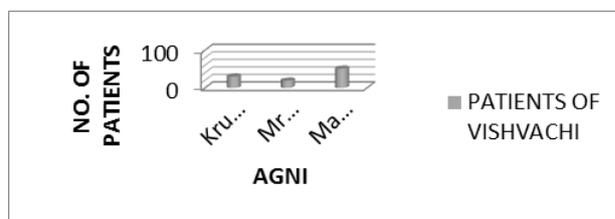
(9) Agni wise distribution of 100 patients of Viswachi.

64% Patients were of Mandagni, 14% were of Tikshnagni, 22% patients were of Vishmagni and 0% patient of Samagni. Most of the patients were having Mandagni.



(10) Kosta wise distribution of 100 patients of Viswachi.

30% Patients were having krura kosta, 19% patients were having Mrudu kosta, 51% patients were having Madhyam kosta.



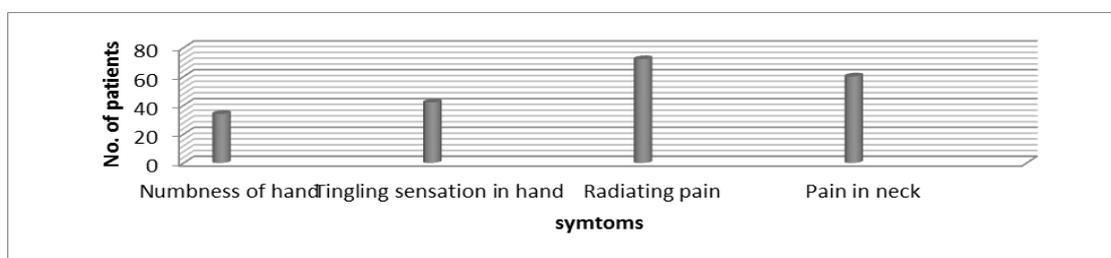
Correlation of *viswachi* and cervical spondylosis from symptomatic point of view.

Sr no	Lakshana of viswachi	Symptoms of Cervical spondylosis
1	<i>Asthiparvbedha</i>	Spinal symptoms-pain radiating to shoulder, arm,fore arm as per affected nerve root
2	<i>Bahuchestapaharini</i>	Pain due to root compression-limitationsof movements
3	<i>Manyashool,manyagraha</i>	Cervical pain Neck stiffness
4	<i>Mansabalkshyaya</i>	atrophy
5	<i>Bhram</i>	Vascular insufficiency may produce vertigo
6	<i>Suptata of bahu and skandh</i>	Numbness in hand and scapular region
7	<i>Hastachimchimayan</i>	Tingling sensation`

11. Graph showing symptoms seen in 100 patients of *Viswachi*

Numbness of hand is seen in 34(34%) out of 100 patients, Tingling sensation in hand is seen in 42(42%),

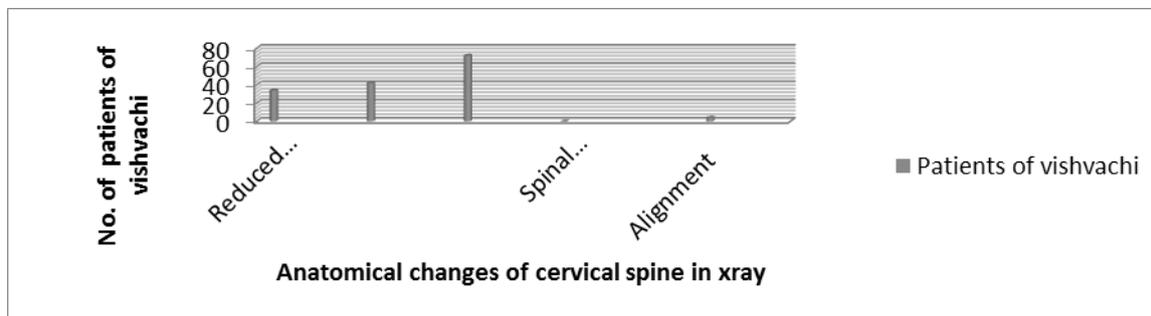
Radiating pain is seen in 72(72%) patients, and pain in neck is seen in 60(60%) patients. This shows that, radiating pain in hand is the main symptom of *Vishvachi*.



12. Anatomical changes seen in 100 patients of *Viswachi*

Graph shows reduced disc space in 34%. osteophytes formation in 42%, vertebral compression in 72%, spinal

canal stenosis in none, and alignment in 4 % shows the most.



DISCUSSION

1) Correlation of symptoms of *Viswachi* with cervical spondylosis from etio-pathological point of view

Sedentary life, processed milk products like curd, paneer, sweets, excess non-vegetarian diet, excessive work in cold water, air conditioned offices, food preserved in refrigerators, cold-drinks, kind of work i.e housewives doing excessive domestic work, increased travelling sitting in front of computers, irregular dietary habits etc. physical as well as mental stress & strain causing vitiation of *vata* thus, all these play an important role in the generation of this disease. Similarly the incidence of cervical spondylosis is increasing day by day due to speed and changes in life style, increased travelling, use of computers etc. Due to the pain in cervical spondylosis, daily routine work is efficiently hampered. An excess amount of simple carbohydrates,

leading a sedentary lifestyle with little or no exercise accelerates cervical spondylosis. Vitiating *vata* is the main causative factor in this disease. From the above we can conclude that the nidus of *Vishwachi* and etiology of Cervical spondylosis are similar to each other. Sushruta explained *vishwachi* is due to vitiated *Vata* and its sites are *skandhas asthi-sandhi* (joints), *bahu*(arms), *anguli*(fingers)^[7] like that only being in and after third decade of life disc degeneration occurs in cervical spondylosis.

In *Vishwachi* disease, the normal *vata* while moving all over the body settles in the (cervical region) making it the *adhista* site. As the *khavaigunya* is in cervical region *vata* fills those channels producing dryness of the *sleshaka sleshma* (synovial fluid) of *grivakaseruka sandhis* (cervical region) along with the *grivakaseruka vikara*. This in turn leads to *dusti* of *kandara* of *bahu*

manifesting the symptoms of *Viswachi* i.e. radiating pain all along the arm & weakened or loss of movements of the arm. Samprapti of *Vishwachi* involves two major steps- **i.** Vitiation of *vata* **ii.** *Kandara dusti*.^[8]

Similarly if we consider Cervical spondylosis high risk factors especially excessive travelling, continuous sitting work lack of exercise reduce metabolic activities in the body & accelerate disc degenerative changes in the body

fat deposition as there is no oxidation of the excessive glucose in the body. This changes occurs in bones and joint of cervical region that mainly occurs over cervical region. Thus produce laxness in the body. Here we can correlate aggravation of *vaat dosha* & *asthidushti* in *viswachi*.

Thus if we consider all above factors we can correlate *viswachi* & cervical spondylosis.

2) Correlation of *viswachi* and cervical spondylosis from symptomatic point of view.

Sr. no.	Lakshana of <i>viswachi</i>	Symptoms of Cervical spondylosis
1	<i>Asthiparvbheda</i>	Spinal symptoms-pain radiating to shoulder, arm, fore arm as per affected nerve root
2	<i>Bahuchestapaharini</i>	Pain due to root compression-limitationsof movements
3	<i>Manyashool,manyagraha</i> ^[9]	Cervical pain Neck stiffness
4	<i>Mansabalkshyaya</i>	atrophy
5	<i>Bhram</i>	Vascular insufficiency may produce vertigo
6	<i>Suptata of bahu and skandh</i>	Numbness in hand and scapular region
7	<i>Hasta-chimchimayan</i>	Tingling sensation`

There are five types of *asthi* described in Ayurveda i.e. *nalak.ruchak, kapaal, tarun, valaya. Grivakasherukha* (cervical vertebrae) comes under *valayasthi*. In modern bones are classified in to 4 types i.e. flat, short, long, irregular, cervical vertebrae comes under irregular bones.

Observations on anatomical changes

Disc degeneration

The process of degeneration of the intervertebral discs causes many problems in the spine. Everything during the day while being upright tests the spine's ability to support your body weight. These repeated daily stresses and minor injuries can add up over time and begin to affect the discs in spine. The disc eventually begins to suffer from the wear and tear-it begins to degenerate. The main problem with degenerative disc disease lies within one or more of the intervertebral discs. There is a disc between each vertebra in the spine. Much of the mechanical stress of everyday movements is transferred to the discs. The intervertebral discs are designed to absorb pressure and keep the spine flexible by acting as cushions during body movement-similar to shock absorbers. Without the cushion effect of the discs, the vertebrae in spine would not be able to absorb stresses or provide the movement needed to bend and twist. It mainly results in vertebral compression, radiating pain. It might be due to diet that aggravating *vaat dosha*, travelling with discomfort that causes aggravation of *vaat dosha*. Due of aggravated *vata dosha*, water content of disc looses and the degeneration occurs, then the vertebral compression occurs .72% of patients found predominant of this observation.

• Reduced Space Disc

When observations were made normally reduced disc space should be increased in ascending order i.e. disc space between c1-c2 should be less than c2-c3, but disc space between c3-c4 is greater than c2-c3. It is found that

reduced space disc found is maximum at c5-c6 vertebrae. It is due maximum load of skull is on c5-c6 vertebrae. It is found in 34% This observation is prevalent since many of patients does not follow healthy life style to prevent *vata* disorders i.e. following daily regimens (*dincharya*) like *niyamita abhayang* (oil massage) oliation and sudation therapy.^[10]

• Osteoporosis

Osteoporosis is a bone disease that causes bones to weaken. There are two types of bone tissue in the body. Cortical bone is the hard outer shell of a bone. Trabecular bone is the honeycomb-like bone in the center of long bones and in the middle of the vertebrae. This cycle of bone build up and break down keeps bones strong. But in osteoporosis, the balance between bone build up and break down is lost. Body slowly starts to break down bone faster than it can regenerate it. The vertebrae of the spine are primarily trabecular bone, they are more likely to be weakened by osteoporosis. Standing erect puts a great deal of pressure on the vertebrae, which means that weakened ones can fracture and start to compress or collapse. It is found in most of individuals which keeps on long standing. By seeing the x ray cervical bones are porous as compared to normal cervical spine. i.e. osteoporotic changes are seen .since it is degenerative disease, aging process occurs in cervical spondylosis.

• Curvature

Straightening of cervical curvature is seen likely due to spasm of paraspinal muscle spasm, but normal curvature is lordotic which is seen mostly in the patients. There was no clear correlation between severity of symptoms and degree of curvature. Neck pain was most severe in patients with cervical spondylosis.

- **Osteophytes**

Marginal osteophytes are seen maximum at the base of C5-C6 vertebrae since all the weight of the skull is concentrated at the base of C5-C6 vertebrae. Cervical osteophyte formation typically occurs when ligaments and tendons around the bones and joints in the cervical spine are damaged or inflamed. The inflamed or damaged tissue abnormally influences surrounding bone growth (though hard, bones are constantly renewing, like fingernails and hair). As a result, new bone cells are deposited where they would not normally grow. The inflamed or damaged tissue that stimulates cervical osteophyte growth is often caused by cervical osteoarthritis, a degradation in the neck joints that occurs in many older people. These joints include the disc spaces themselves (a modified joint) and the facet joints, and this condition of cervical osteophyte formation is referred to as cervical spondylosis. It is found in 42% of individuals, it might be due of *vata dosha* which damages the *asthidhatu* it is clearly seen in xRay, since in all the study or disease *viswachi vata dosha* predominates.

- **Pedicle**

Pedicle is seen intact in cervical spondylosis from c1-c7 in all patients.

- **Erosion**

No erosion is noted in any cervical vertebrae.

- **Alignment**

There are several distinct anatomical regions of the cervical spine including the cranio-cervical junction, C1-C2 articulation, sub-axial spine, and cervicothoracic junction. Each of these highly specialized areas plays a unique role in facilitating neck motion in all 3 planes. Alignment of cervical vertebral spine is normal in most of the patients normal. Normal alignment is not found in only 4 patients during the study.

- **Spinal Canal**

Cervical spondylosis is a condition in which the joints between the vertebral bones of the spine degenerate, potentially progressing to a medical problem known as cervical spine stenosis. The cervical spine is the section of the spine that starts at the base of the skull, travels down the neck and ends at top of the shoulders where the thoracic spine then begins. The spinal cord is soft and, therefore, compressible, unlike the bones that encase it. When the spinal vertebrae degenerate, as happens with age or trauma, the central neural canal can get smaller. As mentioned above, the degeneration of cervical spine vertebral bones is called cervical spondylosis. However, when cervical spondylosis progresses to the point that the neural canal narrows, the condition is called cervical spine stenosis.^[11] While cervical spine stenosis has the potential to compress the spinal cord and cause significant neurological injury, there are many individuals with a narrowing of the spinal canal who do not have symptoms. Some people with asymptomatic

cervical spine stenosis may remain symptom free for their entire lives. Individuals should maintain an active relationship with their physician so that early signs of spinal cord impingement may be detected and addressed, potentially avoiding permanent disability. Bony spinal canal appears normal in all. It is not found in patients mainly.

- Numbness of hand is seen in 34(34%) out of 100 patients, Tingling sensation in hand is seen in 42(42%), Radiating pain is seen in 72(72%) patients, and pain in neck is seen in 60(60%) patients. This shows that, radiating pain in hand is the main symptom of Vishvachi.
- Reduced disc space in 34%. osteophytes formation in 42%, vertebral compression in 72%, spinal canal stenosis in none, and alignment in 4 %. Vertebral compression shows the most.

Discussion Regarding Clinical Study

1) Age

Majority of the patients were of age more than 50 years. This shows that the degenerative changes occurrence starts from the third fourth decade of life. It reveals that the individuals are more affected by *vishwachi* after forties. This is due to decreased physical activity after forties.

2) Gender

Majority of the patients were female i.e. 68 % followed by 32% males. This is because the kind of work they doing i.e domestic work also & were in postmenopausal age group.

3) Economical status

Most of the patients were of middle class. As the sampling was done in the hospital affected subjects were mostly of middle class.

4) Diet pattern

Maximum numbers of patient's diet was of mixed type. No significant relation is found between diet & disease. Probably this factor will be secondary in causing disease.

(5) Prakruti

Out of 100 patients, 39 % Vata-Pittaj prakruti, 20% Vata- Kaphaja prakruti maximum numbers of patients were Vata-Pittaj prakruti. As *Vatadosha* is plays main role in the manifestation of *Viswachi*. So *Vata-pittaj*, and *Vata kafaj Prakruti* may play vital role in *Viswachi*.

(6) Agni

Most of the patients were having Mandagni. From this we can conclude that there is association between Mandagni & production of sapta dhatus leading to dhatu kshya which is also mentioned in Ayurvedic classics.

CONCLUSION

The study entitled, "A Study Of Anatomical Changes In Cervical Spine In Vishvachi W.S.R To Cervical

Spondylosis” was Undertaken. Based upon the results of the clinical study, following conclusions are drawn.

- Reduced space disc is found at C5-C6 mostly.
- Osteoporosis maximum seen at all cervical vertebrae.
- Curvature is normal lordotic curvature.
- Osteophytes maximum seen at c5-c6 vertebrae.
- Pedicle is intact.
- No erosion is noted on cervical spine.
- Spinal alignment is normal.
- Spinal canal appears normal.
- Symptoms of *viswachi* is correlated with the symptoms of cervical spondylosis i.e. *Astiparvabheda* with spinal symptoms –pain radiating to shoulder, arm, forearm as per affected nerve root. (*Bahuchestapaharini*)
- *Manya shool manyagraha* with Cervical pain.
- *Mansabalkshyaya* with Atrophy,
- *Bhram* with vascular insufficiency may produce vertigo.
- *Suptata of bahu* and *skandh* with numbness in hand and scapular region.
- *Hastachimchian* with tingling sensation.
- Maximum symptom radiating pain is observed in patients of Vishvachi.
- Anatomical change i.e vertebral compression is mostly found.
- Majority of the patients were from the age group 50-60 yrs.
- Most of the patients included in this study were of vata-Pittaj Prakriti. 49%

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