CERVICAL, SPONDYLOSIS, CLINICAL STUDY, NEUROLOGICAL, VASCULAR AND POLYSOMNOGRAPHIC CORRELATION

Thesis

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By

Sherif Mohamed El-Tawdy
(M.B., B.Ch.; M.Sc., Cairo University)

Under Supervision of

Prof. Dr. Mahmoud Mohamed Allam
Professor of Neurology,
Faculty of Medicine, Cairo University

Prof. Dr. Sherif Hamdy
Professor of Neurology,
Faculty of Medicine,
Cairo University

Prof. Dr. Seyam Saied
Professor of Neurophysiology,
Faculty of Medicine,
Cairo University

Dr. Nervana El-Fayouomy
Assistant Professor of Neurology,
Faculty of Medicine, Cairo University

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ABBREVIATIONS

5-HT	:	Serotonine
AARS	:	Ascending activating reticular system
Ach	:	Acetylcholine
AHI	:	Apnea-hypoapnea index
AIDS	:	Acquired immune deficiency syndrome
AREZ	:	Anterior root exit zone
AW	:	Adult wake-fullness
CCK	:	Cholecysteokinin
CMV	:	Cytomegalovirus
DA	:	Dopamine
ECG	:	Electrocardiogram
EDV	:	End diastolic velocity
EEG	:	Electroencephalography
EMG	:	Electromyography
EOG	:	Electrooculgoram
GABA	:	Gaba-amino butyric acid
HSV	:	Herpes simplex virus
HTLV-1	:	Human T-lymphotropic virus type-1
LC	:	Locus cerulares
LDT	:	Lateral dorsal tegmental
LGN	:	Lateral geniculate nucleus
NE	:	Noradrenaline
OPLL	:	Ossification of posterior longitudinal ligament
PGO	:	Pontogeniculoocciptal
PLL	:	Posterior longitudinal ligament
PLM	:	Periodic limb movement
PPT	:	Pedunculopontine tegmental nuclei
PSG	:	Polysomnography
PSV	:	Peak systolic velocity
REM	:	Rapid eye movement
RI	:	Resistivity index
SEM	:	Slow eye movement
TCCS	:	Transcranial colour-coded duplex sonography
TST	:	Total sleep time
VAs	:	Vertebral arteries
VIP	:	Vasoactive intestinal polypeptide

ABSTRACT

The term cervical spondylosis refers to the degenerative disease process which involves the interventricular discs, joints, ligaments and connective tissue of the vertebrae. Associated sleep disorders were reported in several studies. The main task in our study is to assess the changes in the sleep pattern encountered in cervical spondylosis. Forty patients diagnosed clinically and radiologically by MRI as having cervical spondylosis and ten controls were subjected to polysomnography, coloured duplex of vertebrobasilar system. **Results:** Our results revealed statistically significant difference between patients and control as regards all parameters of polysomnography and hemodynamic parameters of the vertebral artery, being higher in the patients group. **Conclusion:** Polysomnography is an important tool in detecting sleep disturbance associated with cases of cervical spondylosis especially cervical myelopathy.

Keywords:

Cervical spondylosis – sleep – disorders – polysomnography – cervical myelopathy – cervical radiculopathy

INTRODUCTION

INTRODUCTION

The term cervical spondylosis refers to the degenerative disease process which involves the intervertebral discs, joints, ligaments and connective tissue of the vertebrae. Cervical spondylosis may present in three general categories of clinical presentation. It is important to distinguish between the three as treatment and prognosis are different. Cervical spondylotic radiculopathy is a condition in which there are signs and symptoms of compression of a cervical nerve root. The other two clinical presentations are cervical spondylotic myelopathy and cervical internal disc derangement that presents with neck pain, subscapular pain and or subocciptal headache without a radicular or myelopathic component **(Dillin and Watkins, 1992)**.

Cervical spondylotic myelopathy is the most common cause of spinal cord dysfunction in older persons. The aging process results in degenerative changes in the cerebral spine that, in advanced stages, can cause compression of the spinal cord, symptoms often develop insidiously and are characterized by neck stiffness, arm pain, numbness in the hands, and weakness of the hands and legs. The differential diagnosis includes any condition that can result in myelopathy, such as multiple sclerosis, amyotrophic lateral sclerosis and spinal cord compressive lesion. The diagnosis is confirmed by MRI that shows narrowing of the spinal canal caused by osteophytes, herniated discs and ligamentum flavum hypertrophy **(William, 2000)**.

The impact of degenerative changes in the cervical spine on the vertebral artery (VA) and on the supply of blood to the brainstem is well known **(Remzi Cervik et al., 2010)**, the reduction in disc heights will end in twisting and breaking in the VA blood flow **(Ozdemir et al., 2005)**.

The blood supply to the spinal cord is through three longitudinal arteries and contributions from segmental branches at each level. The anterior spinal artery may be compressed by osteophytes and soft discs **(Frymoyer, 1991)**.

The two dorsolateral arteries may be compressed by infolded ligamentum flavum or facet osteophytes. The segmental radicular vessels enter through the foramina and may be compressed by unconvertebral or facet osteophytes. It is felt that ischemia of the cord contributes to some degree to the signs and symptoms of cervical spondylosis **(Frymoyer, 1991)**.

It was found that pain in cervical spondylosis may result in sleep disruption and insomnia through indirect, nonspecific mechanisms **(Glin, 2004)**. Moreover, **Machado et al. (1994**) described a case of obstructive sleep apnea syndrome in a patient with diffuse idiopathic skeletal hyperostosis, with a giant osteophyte of the cervical column, which leads to obstruction of the pharynx and obstructive sleep apnea.

Another study reported that individuals with high spinal transections can exhibit periodic leg movements during sleep, suggesting the presence of a spinal generator **(Glin, 2004)**.

Polysomnography is a technique for monitoring multiple physiological parameters during sleep and wakefulness.

It serves as a diagnostic tool for evaluation of normal and disturbed sleep and vigilance **(American Electroencephalographic Society, 1992)**.

A full night polysomnography (PSG) study in the sleep laboratory is the main method of evaluation. The study devotes various channels to the EEG (i.e. C4-A1, C3-A2, 01-02), electro-oculogram, Chin and limb (usually anterior tibialis), non invasive EMG, qualitative measurements of oronasal airflow, thoracic and abdominal respiratory efforts, electrocardiogram and phase oximetry **(Shepard and Thawley, 1990)**.

AIM OF THE WORK