

Does Vertigo Predict Hypertension in Cervical Spondylosis: Clinical Trail Study

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Abstract

Background: Both cervical spondylosis and hypertension are common medical conditions. That is whether spondylosis leads to hypertension and whether vertigo could predict hypertension is not clear.

Objective: To identify the relationship between cervical spondylosis & systemic hypertension through identification of probable predictors .

Patient and Method: All patients were seen in Al Mowasat outpatient clinic from January 2017 to August 2019 with symptomatic cervical spondylosis .All of them were evaluated for presence of hypertension along with signs and symptoms of cervical spondylosis. Diagnosis of cervical spondylosis was based on clinical criteria and radiological findings.

Result: A total of 50 patients(31 males and 19 females) were studied. Hypertension was ascertained in 29(58%). Common signs and symptoms of cervical spondylosis were evaluated including headache in 89.4%, vertigo in 83.7%, chest pain in 55%, shoulder pain in 61.9%, numbness in 65.1%, abnormal reflexes in 44.7%, Babiniski sign in 17% and Body Mass Index ≥ 30 in 60.4%). Logistic regression analysis indicated that vertigo is significant independent predictor of hypertension in cervical spondylosis patients.

Conclusions: Vertigo was a predictor of hypertension in spondylosis patients.

Keywords: *Cervical Spondylosis, Hypertension, Vertigo.*

Introduction

Cervical spondylosis is a degenerative disease affects intervertebral disc at different levels with osteophytes formation.¹ Symptoms of cervical spondylosis are variable including headache, numbness, weakness of extremities¹ and others but vertigo is most common symptom.² Surprisingly cervical spondylosis common among patients complaining of vertigo. ² but the links between the two conditions are unclear. The disease is

age related disorder increasing with age where it is about 13%, 34%, 58% in the fifth, sixth, and seventh decades in that order³, yet many individuals above 30 years, show significant abnormalities on plain x ray⁴. Hypertension is common worldwide problem⁵

About 95% of hypertensive patients have no identifiable causes⁵ obesity is one of common cause of secondary hypertension⁶

Hypertension is often asymptomatic⁵, the overall prevalence of hypertension in nearby cities or countries is around 26.5%⁷, 10%⁸, 10.3%⁹ and 22%¹⁰ in ThiQar (north of Basrah city), Saudi Arabia, Kuwait & Iran respectively.

The aim of this study is to evaluate the association between cervical spondylosis and systemic hypertension through probable mediators such as vertigo.

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Patients and Method

This was a cross-sectional study carried out in one major private hospital in Basrah city (Al Mowasat hospital) lasted for twenty months. Patients who met the criteria of having cervical spondylosis both clinically and radiological were included in the study. The study started from January 2018 until August 2019. Diagnosis of cervical spondylosis depended on radiological changes on cervical x-ray and signs and symptoms. Each patient was analyzed for symptoms of cervical spondylosis which including headache, vertigo, numbness shoulder pain, chest pain plus signs like abnormal tendon reflexes, Babinski sign, Lhermitte’s sign. Both compression and traction tests were elicited. Body mass index was evaluated at same time. For each patient, blood pressure was measured with mercurial sphygmomanometer after patients waited for at least five minutes prior to each record. Recorded blood pressure often needed two separated occasions.

Hypertension was defined as blood Pressure $\geq 140/90$ mmHg⁵ or patients on anti-hypertensive medication. Vertigo was defined as rotatory movement either bodily or environmental or according to clinical examination.

Compression tests were performed either by axial compression on the head with neutral head position or rotational movement on extended head, symptoms made worse by these movement indicated a positive test¹¹ traction test provoked by head traction, symptoms relief signified a positive test¹¹ diabetes mellitus diagnosed by history of diabetes mellitus, the use of insulin or other hypoglycemic agents or measurement of fasting blood sugar ≥ 126 mg/dl or random blood sugar ≥ 200 mg/dl.

Body Mass Index (BMI) is the value derived from weight and height as Weight in kg/Height in M²). Underweight patients, considered when BMI under 18,5 kg/M² while BMI between 18,5 kg/M² to 24.9 kg/M²

considered as normal, Overweight patients considered when BMI is 25 to 29.9 & BMI ≥ 30 is indicating obesity.

Babinski sign defined as dorsiflexion of big toe or fanning of the other toes upon stimulation of lateral planter aspect of the foot¹²

Lhermitte’s sign is a sense of electric shock in extremities provoked by neck flexion¹³ radiological finding of cervical spondylosis are including narrowing disc space & marginal osteophytes¹⁴, opinion of radiologist was obtained in controversial instances.

SPSS version 21 was used, Chi-square with significant value of <0.05 adapted to assess the predictors of hypertension in cervical spondylosis. In addition logistic regression analysis was used to identify significant predictors of hypertension of the 50 patients with cervical spondylosis, 31 (62%) patients were males, and 19 (38%) were females, thus the male to female ratio was 1.6:1. The mean age was 51.2 ± 10.1 years with a range of 32-72 years.

The hypertensive patients were distributed as 29 males and 9 females. The majority of patients complained of headache which was observed in 42(89.4%). Others symptoms with relatively higher frequency were vertigo seen in 36 (83.7%). Numbness was seen in 28(65.1%)

While Chest pain was seen in 22 (55%). BMI analysis showed that Obesity was prevalent in 29(60.4%).

Evaluations of signs concerning cervical spondylosis were shown also. Abnormal reflexes were observed in 17 (44.7%), Lhermitte’s sign observed in 13 patients, Babinski sign elicited in 7 patients(17%). Diabetes was ascertain in 9 patients.

Logistic regression analysis to predict hypertension shows that only vertigo is independent and significant predictor of hypertension with p value of 0.026 (Table 1).

Table 1: Logistic regression analysis predicting the hypertension in Cervical spondylosis

Variable	B	S.E.	WALD	DF	SIG	EXP (B)
Sex	1.027	1.748	.345	1	0.557	2.793
Headache	3.183	2.485	1.640	1	0.200	24.108
Vertigo	3.985	1.791	4.949	1	0.026	53.768
Numbness	-1.967-	2.688	.535	1	0.464	.140
Age	.167	.106	2.492	1	0.114	1.181
Lhermitte’s sign	.021	1.398	.000	1	0.988	1.021
BMI	2.673	1.539	3.014	1	0.083	14.479
Shoulder pain	-1.101-	1.566	.494	1	0.482	.333
Constant	-20.990-	11.848	3.139	1	0.076	.000

Discussion

The correlation between cervical spondylosis and hypertension had been studied since few decades in different aspects.

50 years ago Al Badran et al, reported that headache in hypertensive patients if not relieved by reduction of elevated blood pressure, is likely attributable to cervical spondylosis¹⁵

Liu & Ploumis in study published in 2012 reported that cervical spondylosis could be a possible cause of hypertension, they found more than one third of hypertensive patients are no longer need antihypertensive medicine after decompressive cervical surgery and created a term cervicogenic hypertension¹⁶

A Chinese study¹⁷ by Peng B et al (2015) described some association between hypertension and cervical spondylosis, they found also that surgical treatment of cervical spondylosis had successfully controlled hypertension, This study was, however, with limited number of patients(two patients only) but, interestingly they reported important point, which is,surgical decompression of degenerative disc that contributing to cervical spondylosis is relieving hypertension as well as vertigo. In these two patients.

Our observations showed vertigo is independent predictor for hypertension .but vertigo is commonly seen in patients with cervical spondylosis². On the other hand, studies of vertigo in hypertensive patients did not indicate that elevated blood pressure was causing vertigo,(but if existed together) it commonly attributable to other concomitant causes like central nervous system or vestibular diseases.¹⁸

MarchioriL,et al found that incidence of vertigo in hypertensive and non hypertensive patients were similar and concluded that no correlation of vertigo with hypertension could be ascertained.¹⁹ In the present study and according to the logistic regression analysis to predict hypertension, vertigo was the only significant (P=0.021) and independent predictor .in spondylotic patients. Such results clearly denoted that vertigo carried significant impacts in hypertensive patients in complex mechanism need further evaluation or indeed the presence of vertigo could be accidental or possible explanations are the hypotension provoked by antihypertensive medications¹⁸ or concomitant vertebrobasilar insufficiency due to atherosclerosis in hypertensive patients . It remains

plausible however to conclude that the presence of vertigo in cervical spondylosis patients strongly suggests coexistent hypertension.

Conclusions

The presence of vertigo was strongly predict the systemic hypertension in patients with cervical spondylosis.

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