

PERCEPTION OF HEADACHE IS INTERLINKED WITH HIGH BLOOD PRESSURE: A POPULATION BASED MULTICENTER PROSPECTIVE STUDY

Nandlal Rathi¹, Shazia Kazi², Abdul Ghani Shaikh³, Jagdesh Kumar⁴, Jetender Maheshwari⁵, Maria Kumari Rathi⁶, Kartik Kumar Rathi⁷.

ABSTRACT

Objective: Perception of headache is interlinked with high blood pressure: a population based multicenter prospective study. **Patients And Methods:** A prospective observational study has been conducted in a total of 8 months from December 2019 to July 2020 and data has been collected from the Department of out-patient (OPD) of three different hospitals, Department of Cardiology, Isra University Hospital (IUH), Department of Medicine Liaquat University Hospital (LUH), Hyderabad, and National Institute of Cardiovascular Diseases (NICVD), Tando Muhammad Khan. A cohort of 911 patients who presented with complains of headache supposedly due to high blood pressure. Baseline and clinical data were recorded in a pre structured questionnaire and analyzed using Statistical Package for the Social Sciences (SPSS) version 21.0. **Results:** Out of total 911 patients presented with headache, the overall incidence rate of high blood pressure in patients presented with headache was less than 30% (n = 272, 29.85%). Female patients presented with headache were younger than male patients, 27.41±9.23 vs. 36.88±11.78 years, respectively. Among these patients, most of them had headache when their mean systolic blood pressure 173.87±13.54mmHg and a diastolic 97.22±8.01mmHg, p <0.05. **Conclusion:** Our study shows that overall burden of ventricular tachyarrhythmias is almost the double in patients with LVSD and with multiple comorbid conditions as compared with patients normal left ventricular systolic function.

Key Words: Headache, high blood pressure, false perception, Pakistan

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1. Assistant Professor Department of Cardiology National Institute of Cardiovascular Disease, Tando Muhammad Khan
2. Assistant Professor, Department of Cardiology, Isra University Hospital, Hyderabad
3. Assistant Professor, Science of dental material, Liaquat University of Medical & Health Sciences, Hyderabad
4. Assistant Professor, Department of Cardiology, Peoples University of Medical & Health Sciences, Nawabshah
5. Resident Medical Officer, Lyari General Hospital, Lyari Karachi
6. FCPS-II Trainee, Department of Dentistry, Liaquat University of Medical & Health Sciences, Hyderabad
7. Student MBBS, JSMU, Karachi

Corresponding author: Nandlal Rathi¹ Assistant Professor Department of Cardiology National Institute of Cardiovascular Disease, Tando Muhammad Khan.

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INTRODUCTION

Headache is the most common presenting complains of patients presenting in general or cardiac out patients department among males and females and sometimes it may be caused by high blood pressure. Previous epidemiological studies demonstrate a higher burden of headache in general population and around 50% of the general population suffers from headache during any given year and among these them most common is tension type headache while only <5% of the patients are suffering from chronic headache^{1,2}.

High blood pressure or hypertension is the most prevalent disease worldwide and its burden is estimated to be affects 972 million adults which constitutes around 26% of the world's population. The burden of this disease is almost equally distributed in both males and females but slightly higher prevalence is observed in adult males as compare to females. Patients with hypertension may be asymptomatic and high

blood pressure persist until noticed incidentally or symptoms like headache, fatigue, blurred vision, nose bleed, chest heaviness, or difficulty in breathing but these symptoms are non-specific and does not particularly related to high blood pressure^{3,4,5}.

General population and people residing in developing countries correlate headache as a specific symptom of high blood pressure and present in out-patient-department particularly to check their blood pressure but most of the times their headaches are caused by so other problems rather than high blood pressure. That is why considering the high prevalence of hypertension in our population and headache as s chief presenting complain in patients presenting in out-patient-department we have planned to conduct this study to determine how prevalent high blood pressure is in patients presenting in three different hospitals with headache.

PATIENTS AND METHODS

A prospective observational study has been

conducted in a total of 8 months from December 2019 to July 2020 and data has been collected from the Department of out-patient (OPD) of three different hospitals, Department of Cardiology, Isra University Hospital (IUH), Department of Medicine Liaquat University Hospital (LUH), Hyderabad, and National Institute of Cardiovascular Diseases (NICVD), Tando Muhammad Khan. A cohort of 911 patients who presented with complains of headache supposedly due to high blood pressure and adult males & females having age between 18 years to 80 years were included in our study. Patients with known case of hypertension were also included in our study if patients were compliant to drugs and previous 30 days readings of blood pressure were ≤ 130 mmHg systolic and ≤ 80 mmHg diastolic. Patients with known case of any disease that may cause primarily headache (Neoplasm of the brain, migraine, headache due to cold / flu, eyesight problem, cervical spinal cord problem, and/or due to trauma of the head), and medicines causing headache were excluded from the study. All the patients were informed in detail regarding the study and after that consent were taken before commencement of the study. High blood pressure were labeled when the systolic blood pressure was ≥ 140 mmHg and diastolic blood pressure was ≥ 90 mmHg or isolated systolic or diastolic raised blood pressure readings at the time of presentation with chief complain of headache. For the collection of relevant data we have used a structured questionnaire in which data regarding age, sex, area of residence, marital status, systolic & diastolic blood pressure were included and final analysis were performed using the statistical package of social sciences

(SPSS) version 21.

RESULTS

Final analysis were performed on a total of 911 persons who presented with chief complain of headache supposedly due to high blood pressure. Patients were extracted from three different hospitals and most of them from NICVD, Tando Muhammad Khan (n = 467). While rest of the patients were extracted from out-patient department of Medicine of LUH, Hyderabad and out-patient department of cardiology, IUH, Hyderabad, n = 270 and 174, respectively.

The overall mean age of the patients were 41.87 ± 12.74 years and overall male (n = 502, 55.10%) patients were predominant as compared to females (n = 409, 44.89%). Married patients and area of residence were almost equally distributed in all 911 patients. The descriptive analysis is shown in table no. 01.

The overall incidence rate of high blood pressure in patients presented with headache was less than 30% (n = 272, 29.85%). Female patients presented with headache were younger than male patients, 27.41 ± 9.23 vs. 36.88 ± 11.78 years, respectively. Among these patients, most of them had headache when their mean systolic blood pressure 173.87 ± 13.54 mmHg and a diastolic 97.22 ± 8.01 mmHg. The descriptive analysis is shown in table no. 02.

For the better understanding of the patients we have divided the age into three groups, young ($\geq 18 - 40$ years), middle ($\geq 40 - 60$ years), and old ($\geq 60 - 80$ years). There is no any significant association observed when comparing the patients presented with headache in three different age groups with high blood pressure.

TABLE NO. 01: BASELINE CHARACTERISTICS OF STUDY SUBJECTS PRESENTED WITH HEADACHE (N = 911)

Characteristics	Mean age \pm SD
Mean age \pm SD - years	
Overall	41.87 \pm 12.74
Gender	
Male	36.88 \pm 11.78
Female	27.41 \pm 9.23
Marital Status	N (%)
Married	471 (51.70)
Single	440 (48.83)
Area of residence	
Urban	448 (49.17)
Rural	463 (50.82)
Socioeconomic Status	
Low Class	312 (34.24)
Middle Class	503 (55.21)
Upper class	96 (10.53)
Addiction	
Smoker	218 (23.92)
Chewable Tobacco	127 (13.94)
Alcohol consumption	35 (3.84)

CHART NO. 01: OVERALL INCIDENCE OF HIGH BLOOD PRESSURE IN PATIENTS PRESENTED WITH HEADACHE (N = 911)

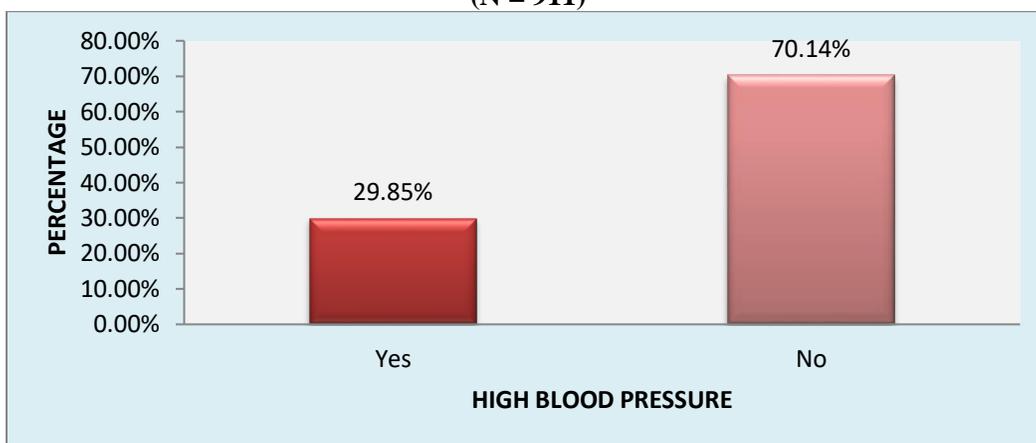


TABLE NO. 02: ASSOCIATION OF HEADACHE WITH BLOOD PRESSURE (N = 911)

Characteristics	High Blood Pressure	Normal Blood Pressure	p value
	(N = 272)	(N = 639)	
Gender	Mean age ± SD	Mean age ± SD	
Male	36.88±11.78	37.17±6.24	0.06
Female	27.41±9.23	39.01±7.87	0.02*
Isolated mean BP - mmHg			
Mean Systolic	173.87±13.54	125.09±10.38	0.001*
Diastolic	97.22±8.01	77.00±6.19	0.03*

*A p value of <0.05 is statistically significant

TABLE NO. 03: ASSOCIATION OF AGE GROUPS WITH RAISED BLOOD PRESSURE IN PATIENTS WITH HEADACHE (N = 911)

Age Groups– Years	Blood Pressure		p value
	Raised Isolated Systolic	Raised Isolated Diastolic	
	(N = 128)	(N = 60)	
≥18 – 40	22.65%	20	0.34
≥40 – 60	36.71%	38.33	0.28
≥60 – 80	40.62	41.66	0.33

A p value of less than <0.05 is statistically significant

DISCUSSION

In a general population people think that headache is directly to the raised blood pressure this myth can be observed in highly civilized countries but the proportion of this myth is higher in developing countries like Pakistan particularly due to lack of education and proper awareness regarding the disease^{6,7}. Although headache is one of the common symptoms that patient may experience due to high blood pressure and anxiety and this proportion can be observed in young females due to stress or anxiety. Growing prevalence of hypertension and anxiety/stress a neglected correlation in our country should be scientifically assessed and

that is why we have planned to conduct this

study to determine actual burden of high blood pressure in patients presented to three different hospitals with a perception of high blood pressure is causing headache to them and also this correlation is further assessed in three different age groups combined with systolic and diastolic blood pressure, isolated systolic or diastolic blood pressure. In our study, the overall incidence rate of headache with hypertension was less than 30% (n = 272, 29.85%). Among these patients, most of them had headache when their mean systolic blood pressure is 173.87±13.54 mmHg and a diastolic mean blood pressure is 97.22±8.01mmHg. While surprisingly patients with headache had higher mean isolated diastolic blood pressure as compared to higher isolated systolic blood pressure or higher combined systolic and diastolic blood pressures. This extensive

exploration of relationship between headache with different variables has not been studied in Pakistan and even data is limited from all over the world but it is well established that young patients who presents with headache are more likely suffering from anxiety/stress^{8,9,10,11}.

CONCLUSION

Our study shows that overall burden of ventricular tachyarrhythmias is almost the double in patients with LVSD and with multiple comorbid conditions as compared with patients normal left ventricular systolic function.

ETHICS APPROVAL: The ERC gave ethical review approval

CONSENT TO PARTICIPATE: written and verbal consent was taken from subjects and next of kin

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CONFLICT OF INTEREST: No competing interest declared.

REFERENCE

1. Assarzagdegan F, Asadollahi M, Hesami O, Aryani O, Mansouri B, Beladi MN. Secondary headaches attributed to arterial hypertension. *Iran J Neurol* 2013;12(3):106-10.
2. Hansson L, Smith DH, Reeves R, Lapuerta P. Headache in mild-to-moderate hypertension and its reduction by irbesartan

- therapy. *Arch Intern Med* 2000 Jun 12;160(11):1654-8.
3. Mills KT, Stefanescu A, He J. The global epidemiology of hypertension. *Nat Rev Nephrol* 2020 Apr;16(4):223-37.
4. Dorans KS, Mills KT, Liu Y, He J. Trends in Prevalence and Control of Hypertension According to the 2017 American College of Cardiology/American Heart Association (ACC/AHA) Guideline. *J Am Heart Assoc* 2018 Jun 1;7(11).
5. Mills KT, Bundy JD, Kelly TN, Reed JE, Kearney PM, Reynolds K, et al. Global Disparities of Hypertension Prevalence and Control: A Systematic Analysis of Population-Based Studies From 90 Countries. *Circulation* 2016 Aug 9;134(6):441-50.
6. Gupta VK. Systemic hypertension, headache, and ocular hemodynamics: a new hypothesis. *MedGenMed* 2006 Sep 12;8(3):63.
7. Raikonen K, Matthews KA, Kuller LH. Trajectory of psychological risk and incident hypertension in middle-aged women. *Hypertension* 2001 Oct;38(4):798-802.
8. Mucci N, Giorgi G, De Pasquale CS, Fiz-Perez J, Mucci F, Arcangeli G. Anxiety, Stress-Related Factors, and Blood Pressure in Young Adults. *Front Psychol* 2016;7:1682.
9. Bacon SL, Campbell TS, Arsenault A, Lavoie KL. The impact of mood and anxiety disorders on incident hypertension at one year. *Int J Hypertens* 2014;2014:953094.
10. Sparrenberger F, Fuchs SC, Moreira LB, Fuchs FD. Stressful life events and current psychological distress are associated with self-reported hypertension but not with true hypertension: results from a cross-sectional population-based study. *BMC Public Health* 2008 Oct 15;8:357.
11. Sparrenberger F, Cichelero FT, Ascoli AM, Fonseca FP, Weiss G, Berwanger O, et al. Does psychosocial stress cause hypertension? A systematic review of observational studies. *J Hum Hypertens* 2009 Jan;23(1):12-9.