ORIGINAL ARTICLE

FREQUENCY OF DYSLIPIDAEMIA IN PATIENTS WITH ESSENTIAL HYPERTENSION; A CROSS SECTIONAL STUDY DONE IN TERTIARY CARE HOSPITAL OF PESHAWAR

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ABSTRACT

Objective: To assess the frequency of dyslipidaemia in our local population presented with essential hypertension to medical OPD.

Material and Methods: It was a Descriptive (Cross sectional study) conducted in the department of General Medicine, Khyber Teaching Hospital-Peshawar, Pakistan from August 2016 to February 2017. A total of 238 patients were enrolled in the study by non-probability consecutive sampling technique. Sample size was calculated by taking 19.1% proportion of dyslipidaemia with essential hypertension, 5% margin of error and 95% confidence level under WHO formula. Diagnosis for both essential hypertension and dyslipidaemia were done by clinical examination and laboratory investigations, respectively. Following proper inclusion and exclusion criteria, the patients were enrolled in the study. Informed consent was taken from each patient and demographics were recorded on pre-designed proforma. The data was analysed using SPSS version 20.0 while graphs were constructed using graph pad prism version 6.0.

Results: In this study 238 patients were observed, out of which 10% were in age group between 31- 40 years, 27% in 41-50 years, 30% in 51- 60 years and 33% were having age more than 60 years. Mean age was 53 years with SD ± 5.71. Male patients constituted 55% while female patients were 45%. Moreover, the frequency of dyslipidaemia was found in 28% patients of essential hypertension. There was no statistical significant association found between different age groups and dyslipidaemia with p-value 0.86, 0.86 and 0.89 respectively but the risk of dyslipidaemia increased with age having odds ratio of 1.05, 1.05 and 1.06 respectively. Gender made no differences in comparison with dyslipidaemia with p-value 0.42 but risk of developing dyslipidaemia in males were less as compared to females.

Conclusion: Among essential hypertensive patients, frequency of dyslipidaemia was found to be 28% indicating significant correlation.

Key Words: Dyslipidaemia, Essential hypertension, Complications.

This article may be cited as: Inayat A, Faisal MS, Hayat W, Iqbal W, Khalil KURI. Frequency of dyslipidaemia in patients with essential hypertension; a cross sectional study done in tertiary care hospital of peshawar. J Med Sci 2019; 27: (1) 34-37.

INTRODUCTION

Essential hypertension, also known as primary hypertension is the most common type of hypertension i.e. constitute about 90 to 95%[1, 2]. Idiopathic hypertension is familial in nature and found to be linked with interaction between genetic and environmental factors[3, 4]. With age, the prevalence of essential hypertension increases and so as the risk of development of renal, cardiac and cerebral events [5, 6]. Essential hypertension is found to be leading cause of myocardial infarction, congestive heart failure, arterial aneurism and stroke [6-8] Dyslipidaemia refers to abnormal plasma level of lipids. These abnormalities are either qualitative, quantitative or both. Quantitative dyslipidaemia means reduced plasma level of HDL-C and increased levels of triglycerides, total cholesterol, LDL-C either solely or in com-

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Date Received: 27 July 2018
Date Revised: 11 February 2019
Date Accepted: 20 February 2019

bination. Qualitatively, dyslipidaemia implies changes in composition of LDL-C which includes small dense LDL-C, increased TG content or increased electro-negativity of LDL-C [9, 10]. According to a study conducted in Pakistan, the frequency of dyslipidaemia with essential hypertension is 19.1% [11]. Similarly, if we compare it to the international study then the concomitant incidence of dyslipidaemia with essential hypertension is 32.4% in United States [12].

The prevalence of dyslipidaemia is high mostly in developed countries and increasing in developing countries, including Pakistan. Studies have shown that effective treatment of dyslipidaemia reduces the rate of morbidity and mortality [13-15]. Therefore, estimation of the prevalence of dyslipidaemia ensures proper planning of health actions for hypertension related dyslipidaemia. Pakistan being a diverse country, difference would be noted in region wise prevalence of the problem but research data is inadequate in Peshawar and most of our inhabitants are unaware of dyslipidaemia, hypertension and its complications. This inadequacy necessitate us to conduct this study with the objective of assessing prevalence of dyslipidaemia with essential hypertension and study its prevalence, preventive measures, comorbidities, complications and socio-demographic correlation of dyslipidaemias with hypertension.

The current study is formulated to find out the frequency of dyslipidaemia in patients with essential hypertension in our local population. Keeping in mind about public health implications, these findings will be of great help for the prevention and treatment of these patients and also in reducing associated mortality and morbidity rates.

MATERIAL AND METHODS

A Descriptive (Cross sectional) study was conducted at General Medicine department of Khyber Teaching Hospital, Peshawar. Total sample size was 238 patients, taking 19.1% proportion of dyslipidaemia with essential hypertension, 95% confidence level and 5% margin of error under WHO formula for sample size. For collection of sample, non-probability consecutive sampling technique was opted. Essential hypertensive patients of either gender and age between 18 to 65 years were included in study. Fasting lipid profile was done in both known and newly diagnosed cases of essential hypertension. Patients who were normotensive or on anti-hypertensive medications, patients with secondary hypertension or any metabolic disorder and those who were not willing to participate in the study were excluded from the study.

Study was carried out after proper approval from the ethical and research committee of hospital. All patients fulfilling the inclusion criteria were included in the study through OPD. The aims and objectives of the study was explained to the patients before taking informed consent. All patients undergone through detailed history and examination. Diagnosis of essential hypertension and dyslipidaemia was based on the clinical and laboratory blood investigations, respectively. Blood pressure of all the recruited patients were recorded by mercury sphygmomanometer while dyslipidaemias were identified by lipid profile in pathology laboratory of Khyber teaching hospital. For this purpose, 5cc blood was collected from all patients following strict aseptic techniques and sent to hospital laboratory on the very same day. All the tests were done under the supervision of senior pathologist. Relevant subjective information i.e. name, gender, age and address were recorded in the study proforma.

STATISTICAL ANALYSIS

Statistical Package for Social Sciences (SPSS) version 20.0 was used to analyse the means and standard deviations of enrolled patient's demographics. Chi-square was done to elaborate any possible statistical association between categorical values. Fisher's exact test was done if value in any group is <5. The risk for developing dyslipidaemia was determined by odds ratio with 95% CI. The graphs were constructed using graph pad prism version 6. P-value <0.05 was considered significant.

RESULTS

Out of 238 enrolled patients, 131 (55%) were males and 107 (45%) were females. Mean age was 53 $\pm$ 5.7 years. The range of the age was 18-65 years in which 24 (10%) patients were in age group between 30-39 years, 64 (27%) patients between 40-49 years, 71 (30%) patients between 50-59 years and 73 (33%) patients were categorised in the age above 60 years. Similarly, dyslipidaemia was found in 67 (28%) patients while patients with normal lipid profile were 171 (72%) as shown in table 1. In order to find any possible statistical association between dyslipidaemia and age categories, chi-square test was performed. All the results are summarized in table 2. Though we do not found any possible statistical association between different age groups (40-49 years, 50-59 years, >60 years) with dyslipidaemia with p-value 0.86, 0.86 and 0.89 respectively but the chances of dyslipidaemia increased with increasing age with Odds ratio and 95% CI of 1.05 (0.37-2.96), 1.05 (0.37-2.91) and 1.06 (0.38-2.92) respectively.

Similarly, chi-square was applied to elaborate any significant statistical association between dyslipidaemia and gender. Results revealed no statistical significant association between the stated variables with p-value 0.42 but males developed less dyslipidaemia as com-

pared to females with Odds ratio and 95% CI of 0.76 (0.43-1.34). The results are summarized in table 3.

DISCUSSION

This study was carried out to determine the co-relation between hypertension and dyslipidaemias because both these conditions are among major causes of morbidity and mortality in our population. Therefore, health care providers should be attentive to determine the aetiology, pathogenesis and complications of hypertension and dyslipidaemias. Their combined effects on cardiovascular, cerebrovascular and renal system is greater in comparison to their isolated effects. Hypertension and dyslipidaemias can result in various complications such as cerebral vascular accidents, myocardial infarction, aortic aneurysm, atherosclerosis, retinopathy and chronic renal failure, so these complications are the major reason for hospitalization in tertiary care hospitals. As Khyber Pakhtunkhwa is financially fragile province and our hospitals have limited capacities, so frequent hospitalizations put a great burden on hospital resources. This study was formulated to take effective steps to prevent and reduce related complications.

Table 1: Distribution of age, gender and dyslipidaemia(n=238)

Age distribution	
Age	Frequency & % ages
30-39 years	24(10%)
40-49 years	64(27%)
50-59 years	71(30%)
> 60 years	79(33%)
Total	238(100%)
Gender distribution	
Gender	Frequency & % ages
Male	131(55%)
Female	107(45%)
Total	238(100%)
Dyslipidaemia frequency	
Dyslipidemia	Frequency
Yes	67(28%)
No	171(72%)
Total	238(100%)

In current study, 238 patients were enrolled with mean age 53 years and standard deviation of ±5.71. Our study reported the incidence of dyslipidaemia to be 28% in patients presenting with essential hypertension. Similar results were seen in another study conducted by Michael P et al in which the concomitant incidence of dyslipidaemia with essential hypertension was 32.4% in United States [12]. Slightly different observations were seen in a study by Muhammad AS et al in which the dyslipidaemia frequency with essential hypertension was 19.1%, which is lower as compared to our study[11]. Our results also correlate with studies like Khader YS et al among Jordan population and study conducted by Cummings DM et al, in which the incidence of dyslipidaemia was found to be 30% and 33% respectively in patients presenting with essential hypertension[16,17]. Similarly, another study published in 2019 reported dyslipidaemia in these patients to be 65% [18].

The above studies revealed high incidence of hypertension and dyslipidaemias and urgent interventions are needed to reduce it.

Limitations of the study

Sample size was selected from hypertensive patients visiting OPD, so it is not representative of whole population. Lipid profile was taken on single day, so changes in lipid profile over different days were not taken into consideration. The study was conducted in single centre. Multi-centre studies with large sample size needed to be carried out for clear picture.

CONCLUSION

Our study concluded that among essential hypertensive patients, frequency of dyslipidaemia was found

Table 2: Stratification of dyslipidemia W.R.T age (n=238)

Age	**Dyslipidaemia Yes/No**		**X2 value**	**p-value**	**Odds ratio**	**95% CI**
30-39 years	7	17	Ref	Ref	Ref	Ref
40-49 years	18	46	0.02	0.86	1.05	0.37-2.96
50-59 years	20	51	0.028	0.86	1.05	0.37-2.91
>60 years	22	57	0.01	0.89	1.06	0.38-2.92

Table 3: Stratification of dyslipidemia W.R.T gender (n=238)

Gender	**Dyslipidaemia Yes/No**		**X2 value**	**p-value**	**Odds ratio**	**95% CI**
Males	37	30	0.62	0.42	0.76	0.43-1.34
Females	124	77				

to be 28% indicating significant correlation. Patients with essential hypertension should be properly counselled regarding diet and exercise to reduce the percentage of dyslipidaemia and associated long term complications.

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CONFLICT OF INTEREST: Authors declare no conflict of interest

GRANT SUPPORT AND FINANCIAL DISCLOSURE NIL

AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under:

Inayat A: Planned study and wrote manuscript.

Faisal MS: Helped in manuscript writing and bibliography.

Hayat W: Helped in data collection.

Iqbal W: Statistical analysis.

Khalil KURI: Critical review.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.