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Original Research Article

Prevalence of Dyslipidemia in Recently Diagnosed Hypertensive Patients

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Abstract:

Introduction: Dyslipidemia often coexists with hypertension, increasing cardiovascular risk. This study assesses the prevalence of dyslipidemia in newly diagnosed hypertensive patients.

Methodology: A six-month observational study was conducted at IGIMS, Patna, involving 100 newly diagnosed hypertensive patients. Lipid profiles were analyzed, and associations with age and BMI were evaluated.

Results: Dyslipidemia was found in 62% of patients, with elevated triglycerides (45%) and total cholesterol (40%) being the most common. Higher age and BMI were significantly associated with dyslipidemia.

Conclusion: There is a high prevalence of dyslipidemia among newly diagnosed hypertensive patients, especially in those with higher age and BMI.

Recommendation: Routine lipid screening and lifestyle modifications are essential in managing cardiovascular risk in hypertensive patients.

Keywords: Dyslipidemia, Hypertension, Prevalence, Lipid Profile, Cardiovascular Risk

Introduction:

The relationship between dyslipidaemia and hypertension is a major subject of concern in cardiovascular medicine, since both disorders together increase the likelihood of negative cardiac events [1]. Dyslipidaemia, characterised fundamentally by increased concentrations of total cholesterol, low-density lipoprotein (LDL) cholesterol, triglycerides, and decreased high-density lipoprotein (HDL) cholesterol, is commonly seen in association with hypertension [2]. The concurrent presence of these factors can result in a more pronounced advancement of cardiovascular disorders, such as coronary artery disease, stroke, and peripheral artery disease. Contemporary studies emphasise the widespread occurrence and consequences of dyslipidaemia in recently diagnosed hypertension patients, underscoring the pressing requirement for comprehensive treatment approaches [3,4].

Empirical research conducted over the past ten years has repeatedly demonstrated that the simultaneous occurrence of

hypertension and dyslipidaemia greatly increases the risk of cardiovascular disease [5]. For example, comprehensive cohort research released in 2022 revealed that about 54% of adults who were recently diagnosed with hypertension also had dyslipidaemia, highlighting the widespread coexistence of both disorders. In addition, a meta-analysis carried out in 2023 demonstrated that hypertension patients with dyslipidaemia have a twofold increased risk of experiencing myocardial infarction compared to those without dyslipidaemia [6,7,8]. The etiology of these diseases is characterised by intricate interplay among blood vessel function, lipid metabolism, and renal control, which are further intensified by common risk factors such as obesity, poor diet, and sedentary lifestyle [9]. Elevated lipid levels can precipitate an inflammatory condition that might worsen vascular function, therefore contributing to the development of hypertension. Conversely, hypertension can cause changes in lipid metabolism by modifying renal function and hormonal equilibriums that control lipid processing [10,11].

To provide a comprehensive overview of this public health issue, this research paper intends to investigate the prevalence of dyslipidaemia among persons recently diagnosed with hypertension by analyzing data across demographics, geographic regions, and socioeconomic statuses. Through the integration of results from several recent studies, this paper aims to provide significant insights into the epidemiological patterns, suggest mechanisms of interaction, and explore possible solutions. This methodology not only seeks to enhance the current body of knowledge but also to assist clinical practitioners in formulating more efficient and customized treatment strategies for patients dealing with these relevant disorders.

Methodology

Study Design

This study employed a descriptive, observational cohort design to examine the prevalence of dyslipidemia among patients recently diagnosed with hypertension. The primary objective was to assess the frequency of dyslipidemia within six months of hypertension diagnosis and identify any correlating demographic or clinical characteristics.

Study Setting

The research was conducted at the Indira Gandhi Institute of Medical Sciences (IGIMS) in Patna. IGIMS is a premier medical institution that offers both outpatient and inpatient services, making it an ideal location for recruiting a diverse patient cohort representative of the general population in the region.

Participants

A total of 100 patients who were newly diagnosed with hypertension (within the last month) were enrolled in the study.

The inclusion criteria were:

- Age 18 years or older

- Diagnosis of hypertension, defined as systolic blood pressure ≥ 140 mmHg and/or diastolic blood pressure ≥ 90 mmHg on two separate occasions

- Consent to participate in the study

The exclusion criteria included:

- Patients with a prior diagnosis of dyslipidemia or on lipid-lowering medication

- Patients with secondary hypertension due to identifiable causes such as renal artery stenosis, endocrine disorders, etc.

- Pregnant women

- Patients with a history of cardiovascular disease

Data Collection

The baseline demographic and clinical data was obtained by a standardised questionnaire and medical record review. Age, gender, BMI, family history of

cardiovascular disease, smoking, and diet were considered. Blood samples were taken at the start and end of the 6-month research. Triglycerides, total cholesterol, LDL cholesterol, and HDL cholesterol were measured.

Statistical Analysis

The study population's demographic and clinical features were summarised using descriptive statistics. The fraction of patients with lipid levels beyond the normal range based on NCEP guidelines was used to compute dyslipidaemia prevalence. Chi-square and Fisher's exact tests were used to assess dyslipidemia's connection with categorical factors, while t-tests and ANOVA were utilized for continuous variables. Logistic regression was used to find dyslipidaemia predictors in newly diagnosed hypertensives.

Ethical Considerations

IGIMS, Patna's IRB accepted the study protocol. Before participating, all subjects gave written informed consent. The Declaration of Helsinki was followed and patient data was protected throughout the study.

Results

Table 1: The study enrolled 100 newly diagnosed hypertensive patients, with the following baseline demographic characteristics:

Variable	Total Participants	Percentage (%)
Gender		
Male	58	58%
Female	42	42%
Age Group		
18-35 years	20	20%
36-55 years	45	45%
56+ years	35	35%
BMI (kg/m²)		
<25	25	25%
25-29.9	50	50%
≥30	25	25%
Smoking Status		
Non-smoker	70	70%
Smoker	30	30%

Prevalence of Dyslipidemia

Table 2: After six months, dyslipidemia was diagnosed in 62 of the 100 patients, indicating a prevalence rate of 62%. The breakdown of abnormal lipid profiles is as follows:

Lipid Parameter	Abnormal Level (%)
Total Cholesterol (>200 mg/dL)	40%
LDL Cholesterol (>130 mg/dL)	35%
HDL Cholesterol (<40 mg/dL for males, <50 mg/dL for females)	30%
Triglycerides (>150 mg/dL)	45%

Research showed statistically significant associations between dyslipidaemia and various factors. BMI, age, and abnormal lipid levels were strongly correlated. Individuals with a BMI over 30 had an increased risk of dyslipidaemia compared to those with a BMI under 25 ($p < 0.05$). Dyslipidaemia was more prevalent in

individuals aged 56 and older compared to those in lower age groups ($p < 0.01$).

According to logistic regression, hypertension patients' BMI and age independently predict dyslipidaemia. These relationships included ORs of 2.8 (95% CI 1.3-6.1) and 3.5 (95% CI 1.7-7.4). The study found that a significant number of newly diagnosed hypertensives develop dyslipidaemia within six months, especially those who are older and have higher BMIs. To lower cardiovascular disease risk, hypertensive patients must be carefully screened and treated for dyslipidaemia.

Discussion

An investigation revealed a significant occurrence of dyslipidaemia (62%) among patients who were recently diagnosed with hypertension at IGIMS, Patna. The predominant lipid abnormalities seen were increased levels of triglycerides (45%) and total cholesterol (40%). Furthermore, age and BMI were found to be important indicators of dyslipidaemia, since older patients and those with a higher BMI were more prone to having aberrant lipid profiles [12,13].

The reported results suggest that most recently diagnosed hypertension patients have an increased susceptibility to dyslipidaemia, underscoring the strong correlation between these two cardiovascular risk factors [14]. The significant incidence of dyslipidaemia in this group indicates that lipid problems may either emerge simultaneously with the initiation of hypertension or arise shortly after, therefore adding complexity to the cardiovascular risk profile of these individuals. The correlation between age and BMI suggests that lifestyle and metabolic factors are integral in the development of both hypertension and dyslipidaemia [15,16].

The findings of this study align with the current body of literature, which has established a robust association between hypertension and dyslipidaemia. In a separate region of India, a study undertaken by Gupta et al. (2021) revealed a comparable prevalence incidence of dyslipidaemia (58%) among recently diagnosed hypertension patients. Moreover, a meta-analysis conducted by Zhou et al. (2023) emphasised that the simultaneous presence of hypertension and dyslipidaemia greatly raises the likelihood of cardiovascular events, thereby underscoring the necessity of simultaneously treating both disorders [3,4]. The correlation between elevated BMI and dyslipidaemia reported in this study is consistent with previous scholarly investigations, indicating that obesity plays a crucial role in disrupting lipid metabolism in those with hypertension [17,18].

The elevated incidence of dyslipidaemia in recently diagnosed hypertension individuals can be ascribed to many physiological and lifestyle-related factors. Hypertension and dyslipidaemia are associated with similar risk factors, including obesity, inadequate food, and lack of physical activity, which give rise to both increased blood pressure and aberrant lipid metabolism. The presence of hypertension can result in endothelial dysfunction, therefore facilitating the buildup of lipids and the development of atherosclerosis. In contrast, dyslipidaemia can undermine the ability of blood vessels to contract and function properly, therefore playing a role in the onset and persistence of hypertension. The observed correlation with age may be attributed to the cumulative impact of these risk factors over time, together with age-related metabolic alterations that heighten vulnerability to both disorders [3,7]. Furthermore, the robust association between BMI and dyslipidaemia provides evidence that obesity is a key factor in the development of dyslipidaemia. Undue accumulation of adipose tissue can cause elevated levels of free fatty acid secretion, insulin resistance, and changes in lipid metabolism, ultimately leading to a lipid profile that promotes the development of atherosclerosis. The

aforementioned statement highlights the significance of weight control and lifestyle adjustments in the prevention and treatment of dyslipidaemia in individuals with hypertension [19,20]. The results of this study emphasise the need to conduct early and comprehensive screening for dyslipidaemia in individuals lately diagnosed with hypertension. Simultaneously treatment of both disorders by lifestyle changes and medicines may be essential in decreasing the overall cardiovascular risk in this group.

Conclusion

Among newly diagnosed hypertensives, dyslipidaemia (62%) is prevalent, with raised triglycerides and total cholesterol being the most common abnormalities. The strong link between dyslipidaemia, age, and BMI emphasises the necessity for early, comprehensive screening and therapy. These findings emphasise the need for lifestyle changes and medicines to avoid cardiovascular disease progression in hypertension patients.

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