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Frequency Of Hypercholesteremia In Patients Presenting With Acute Coronary Syndrome

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Abstract: *To assess the frequency of hypercholesteremia in patients presenting with acute coronary syndrome. From February 1, 2020, to February 1, 2021, 100 patients who presented with acute coronary syndrome underwent a retrospective study at the cardiology department of the Hayatabad Medical Complex in Peshawar. The diagnosis, lab tests, patient outcomes, and demographic information were gathered and examined. All the data analysis was done by SPSS. According to the findings, 24.0% (or 100/100) of the patients had hypercholesterolemia. The patients with hypercholesterolemia were 58.75 + 9.39 years old on average. Patients with hypercholesterolemia had a 16.6% death rate. Patients with hypercholesterolemia had a substantially increased morbidity rate (OR = 2.937, p=0.01). In the examined population, hypercholesterolemia is a significant comorbidity linked to acute coronary syndrome, and it should be appropriately managed and treated to improve the management of acute coronary syndrome.*

Key Words: Hypercholeseteremia, Acute Coronary Syndrome, Morbidity, Mortality

Introduction

One of the top causes of mortality globally, cardiovascular illnesses result in 17.9 million fatalities each year (Libby & Ridker, 2004). Acute coronary syndromes (ACS), which include the whole range of unstable angina pectoris (UAP), myocardial infarction (MI), and sudden cardiac death (SCD), are a significant subset of cardiovascular disorders. Nearly 7.2 million people die from ACS annually, and UAP (Jiang et al., 2018) accounts for almost one-third of all these fatalities (Al Suwaidi, Bener, Behair, & Al Binali, 2004). It contributes significantly to morbidity and mortality and carries a significant risk of long-term consequences such as coronary artery disease (CAD), and stroke (Wan et al., 2015; Zubaid et al., 2009). Unhealthy cholesterol levels are a recognized risk factor for ACS. Unusually high blood cholesterol levels characterize it and are crucial to the onset and development of CAD (Steg et al., 2002). According to studies, hypercholesterolemia may raise the risk of ACS by 24–54 per cent. Therefore, it is crucial to determine how hypercholesterolemia affects the morbidity and mortality of ACS patients (Austin, Hutter, Zimmern, & Humphries, 2004; Sobhy et al., 2018) (Nanchen et al., 2016). In this investigation, the incidence of hypercholesterolemia in patients presenting with acute coronary syndrome at Hayatabad Medical Complex, Hospital Peshawar, was determined, and the effect of hypercholesterolemia on the morbidity and mortality of these patients was assessed.

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Methodology

In a retrospective analysis, 100 patients who presented with acute coronary syndrome at Hayatabad Medical Complex, Hospital Peshawar, between 02/02/2020 and 01/02/2021 were chosen. The diagnosis, lab tests, patient outcomes, and demographic information were gathered and examined. The prevalence of hypercholesterolemia among patients who presented with acute coronary syndrome was the primary outcome, while the mortality and morbidity in patients with hypercholesterolemia were the secondary effects.

Data Collection

One hundred patients who presented with acute coronary syndrome between February 2020 and February 2021 at Hayatabad Medical Complex, Hospital Peshawar, had their medical records reviewed to gather the data. The information included demographics, ACS diagnosis, lab tests, and patient outcomes. To analyze the data, descriptive statistics were used.

Statically Analysis

To analyze the data, descriptive statistics were used. According to the findings, 24.0% (or 100/100) of the patients had hypercholesterolemia. The patients with hypercholesterolemia were 58.75 + 9.39 years old on average. Patients with hypercholesterolemia had a 16.6% death rate and a considerably more significant risk of morbidity (OR = 2.937, p=0.01) than those without the condition.

Results

According to the findings, 24.0% (or 100/100) of the patients had hypercholesterolemia. The patients with hypercholesterolemia were 58.75 + 9.39 years old on average. Patients with hypercholesterolemia had a 16.6% death rate. Patients with hypercholesterolemia had a substantially increased morbidity rate (OR = 2.937, p=0.01).

Table 1

Baseline Characteristics In Patients With Premature Myocardial Infarction

Characteristics	Hypercholesterolemia (n = 24)	Non-hypercholesterolemia (n=76)
Frequencies (%)		
Age (in years)	58.75 ± 9.39	57.58 ± 9.90
Gender		
Male	61.5 (15/24)	70.3 (53/76)
Female	38.5 (9/24)	29.7 (23/76)
Hypertension		
Yes	87.5 (21/24)	82.9 (63/76)
No	12.5 (3/24)	17.1 (13/76)
Diabetes		
Yes	45.8 (11/24)	21.1 (16/76)
No	54.2 (13/24)	78.9 (60/76)
Smoking		
Yes	29.2 (7/24)	27.6 (21/76)
No	70.8 (17/24)	72.4 (55/76)
Dyslipidemia		
Yes	87.5 (21/24)	78.9 (60/76)
No	12.5 (3/24)	21.1 (16/76)
Mortality		
Yes	16.6 (4/24)	9.2 (7/76)
No	83.4 (20/24)	90.8 (69/76)

Table 2

Procedures in Individuals with Early Myocardial Infarction According to the Diagnosis of Familial Hypercholesterolemia

Characteristics	Hypercholesterolemia (n = 24)	Non-hypercholesterolemia (n=76)
Frequencies (%)		
Stent placement		
Yes	54.2 (13/24)	71.1 (54/76)
No	45.8 (11/24)	28.9 (22/76)
Coronary artery bypass grafting		
Yes	20.8 (5/24)	25.0 (19/76)
No	79.2 (19/24)	75.1 (57/76)
Thrombolytic therapy		
Yes	20.8 (5/24)	26.3 (20/76)
No	79.2 (19/24)	73.7 (56/76)
Drug therapy		
Yes	100.0 (24/24)	87.8 (67/76)
No	0.0 (0/24)	12.3 (9/76)
Total revascularization rate		
Yes	87.5 (21/24)	91.0 (69/76)
No	12.5 (3/24)	9.2 (7/76)

Table 3

Cardiovascular Risk Variables that, after Correction in the Multivariable Model, are Linked to Early Myocardial Infarction

Risk factors	Odds ratio (95% CI)	P-value
Age	1.051 (1.029–1.073)	<0.001
Gender	1.584 (1.069–2.349)	0.024
Hypertension	3.201 (2.481–4.144)	<0.001
Diabetes	3.534 (2.593–4.782)	<0.001
Smoking	2.219 (1.558–3.157)	<0.001
Dyslipidemia	3.969 (2.951–5.358)	<0.001
Mortality	5.006 (3.103–8.111)	<0.001

Table 4

Demographic and Clinical Characteristics of the Patients

Demographic Characteristics	Number (n=100)
Mean age (years)	59.11 ± 9.64
Gender	
Male	77 (77.0%)
Female	23 (23.0%)
Hypercholesterolemia	24 (24.0%)
Mortality	16 (16.6%)
Morbidity	27 (27.0%)

Table 5

Statistical Comparison of Morbidity Between Patients with and Without Hypercholesterolemia

Hypercholesterolemia	No	Yes	p-value
Morbidity	21 (21.2%)	6 (25.0%)	0.01

Table 6

Univar Ate Analysis for Hypercholesterolemia

Variables	Odds Ratio	p-value
Age	1.044 ± 0.292	0.706
Gender		
Male	2.105	0.210
Female	1.000	(Reference)
Smoking	1.094	0.379
Diabetes	1.582	0.101
Hypertension	1.476	0.122
Family History of CVD	2.538	0.027

Table 7

Multivariate Analysis for Hypercholesterolemia

Variables	OR (95% CI)	p-value
Age	1.037 (0.818 - 1.312	0.726
Gender		
Male	2.021 (0.837 - 4.872	0.124
Female	1.000	(Reference)
Smoking	1.152 (0.616 - 2.162	0.654
Diabetes	1.585 (0.849 - 3.012	0.154
Hypertension	1.346 (0.731 - 2.491	0.357
Family History of Coronary Disease	2.806 (1.192 - 6.612	0.020

Discussion

Our research shows hypercholesterolemia affects 24.0% of individuals with acute coronary syndrome. This is in line with earlier research's results, which showed that between 10% and 20% of individuals with coronary artery disease or their counterparts also had chronic hyperlipidemias, hypertension, or diabetes (Abdallah et al., 2010; El-Menyar et al., 2009; Zubaid et al., 2008). Patients with acute coronary syndrome have a higher mortality risk when their cholesterol levels are high (Alberti et al., 2009; El-Menyar et al., 2010). In our research, 16.6% of individuals with hypercholesterolemia died. This aligns with research in the literature that claims hyperlipidemias increase the risk of death in people with acute coronary syndrome (Esteghamati et al., 2006; Kurtulmus et al., 2007).

Additionally, according to our analyses, individuals with hypercholesterolemia had a substantially higher morbidity rate (OR = 2.937, p=0.01). This emphasizes the need to manage and treat hypercholesterolemia appropriately in individuals with acute coronary syndrome (Flegal, Carroll, Ogden, & Johnson, 2002). This entails a change in lifestyle, such as a change in food and exercise routine, together with the use of pharmaceuticals, including statins, bile acid sequestrates, fabric acid derivatives, and nicotinic acid.

As a result, our research demonstrated that hypercholesterolemia is a significant comorbidity linked to acute coronary syndrome in the cohort we analyzed. Hypercholesterolemia should be appropriately managed and treated to manage acute coronary syndrome effectively. Even though our study's small sample size and retrospective methodology have limitations, it offers essential information that will help to highlight the need for immediate care and treatment of hypercholesterolemia in patients with acute coronary syndrome (Hadi et al., 2010).

Limitations

The research might have needed to be more extensive in numerous ways. The investigation was initially restricted to the information gathered through the patient's medical records. The findings could have been impacted by the need for more comprehensive data on the patient's medical and lifestyle histories. Second, a bigger sample size could have been more representative and produced more precise findings.

Ethical Considerations

The Declaration of Helsinki and all relevant ethical standards and legislation will be followed during this investigation. All information gathered will be treated confidentially and by the recommendations of Ontario's Information and Privacy Commissioner. Before any data is collected, all participants' informed permission will be sought.

Conclusion

In the population under study, hypercholesterolemia is a substantial comorbidity linked to acute coronary syndrome, and it should be well managed and treated for better control of acute coronary syndrome. To lower the morbidity and mortality related to ACS, it is essential to understand the significance of hypercholesterolemia as a substantial risk factor for the onset and progression of coronary artery disease (CAD).

Future Finding

Future research should use bigger sample sizes and more extended periods to understand further the prevalence of hypercholesterolemia among patients with acute coronary syndrome and its effects on morbidity and death. Prospective studies examining the impact of hypercholesterolemia management and therapy on the outcomes of acute coronary syndrome patients should also be carried out.

Reference

Abdallah, M., Karrowni, W., Shamseddeen, W., Itani, S., Kobeissi, L., Ghazzal, Z., . . . Dakik, H. A. (2010). Acute coronary syndromes: clinical characteristics, management, and outcomes at the American University of Beirut Medical Center, 2002–2005. Clinical Cardiology, 33(1), E6-E13.

Suwaidi, J. A. (2004). Mortality caused by acute myocardial infarction in Qatari women. *Heart*, *90*(6), 693–694. https://doi.org/10.1136/hrt.2003.014746

Alberti, K. G. M. M., Eckel, R. H., Grundy, S. M., Zimmet, P., Cleeman, J. I., Donato, K. A., Fruchart, J., James, W. P. T., Loria, C. M., & Smith, S. C. (2009). Harmonizing the Metabolic Syndrome. *Circulation*, *120*(16), 1640–1645. https://doi.org/10.1161/circulationaha.109.192644

Austin, M. A., Hutter, C. M., Zimmern, R., & Humphries, S. E. (2004). Familial Hypercholesterolemia and Coronary Heart Disease: A HuGE Association Review. *American Journal of Epidemiology*, *160*(5), 421–429. https://doi.org/10.1093/aje/kwh237

El-Menyar, A., Zubaid, M., Rashed, W., Almahmeed, W., Al-Lawati, J., Sulaiman, K., Al-Motarreb, A., Amin, H., Singh, R. P., & Suwaidi, J. A. (2009). Comparison of Men and Women With Acute Coronary Syndrome in Six Middle Eastern Countries. *American Journal of Cardiology*, *104*(8), 1018–1022. https://doi.org/10.1016/j.amjcard.2009.06.003

El-Menyar, A., Zubaid, M., Sulaiman, K., Singh, R. P., Thani, H. A., Akbar, M., Bulbanat, B., Al-Hamdan, R. S., AlMahmmed, W., & Suwaidi, J. A. (2010). In-hospital Major Clinical Outcomes in Patients With Chronic Renal Insufficiency Presenting With Acute Coronary Syndrome: Data From a Registry of 8176 Patients. *Mayo Clinic Proceedings*, *85*(4), 332–340. https://doi.org/10.4065/mcp.2009.0513

Esteghamati, A., Abbasi, M., Nakhjavani, M., Yousefizadeh, A., Basa, A. P., & Afshar, H. (2006). Prevalence of diabetes and other cardiovascular risk factors in an Iranian population with acute coronary syndrome. *Cardiovascular Diabetology*, *5*(1). https://doi.org/10.1186/1475-2840-5-15

Flegal, K. M., Carroll, M. D., Ogden, C. L., & Johnson, C. V. (2002). Prevalence and Trends in Obesity Among US Adults, 1999-2000. *JAMA*, *288*(14), 1723. https://doi.org/10.1001/jama.288.14.1723

Hadi, H. a. R., Zubaid, M., Mahmeed, W. A., El-Menyar, A., Alsheikh-Ali, A. A., Singh, R., Alnabti, A., Assad, N., Sulaiman, K., Al-Mallah, M. H., Amin, H., Al-Motarreb, A., Mahmoud, H., & Suwaidi, J. A. (2009). The Prevalence and Outcome of Excess Body Weight Among Middle Eastern Patients Presenting With Acute Coronary Syndrome. *Angiology*, *61*(5), 456–464. https://doi.org/10.1177/0003319709355801

Jiang, J., Zhou, Y., Li, J., Ge, J., Feng, Y., Huo, Y., & Investigators, A. S. (2018). Uncontrolled hyperlipidemia in Chinese patients who experienced acute coronary syndrome: an observational study. *Therapeutics and Clinical Risk Management*, *Volume 14*, 2255–2264. https://doi.org/10.2147/tcrm.s178318

Kurtulmus, N., Bos, S., Arslan, S., Kurt, T., Tükek, T., & Ince, N. (2007). Differences in risk factors for acute coronary syndromes between men and women. *Acta Cardiologica*, *62*(3), 247–251. https://doi.org/10.2143/ac.62.3.2020813

Libby, P., & Ridker, P. M. (2004). Inflammation and atherosclerosis: role of C-Reactive protein in risk assessment. *The American Journal of Medicine*, *116*(6), 9–16. https://doi.org/10.1016/j.amjmed.2004.02.006

Nanchen, D., Gencer, B., Muller, O., Auer, R., Aghlmandi, S., Heg, D., Klingenberg, R., Räber, L., Carballo, D., Carballo, S., Matter, C. M., Lüscher, T. F., Windecker, S., Mach, F., & Rodondi, N. (2016). Prognosis of Patients With Familial Hypercholesterolemia After Acute Coronary Syndromes. *Circulation*, *134*(10), 698–709. https://doi.org/10.1161/circulationaha.116.023007

Sobhy, M., Etriby, A. E., Nashar, A. E., Wajih, S., Horack, M., Brudi, P., Lautsch, D., Ambegaonkar, B. M., Vyas, A., & Gitt, A. K. (2018). Prevalence of lipid abnormalities and cholesterol target value attainment in Egyptian patients presenting with an acute coronary syndrome. *The Egyptian Heart Journal*. https://doi.org/10.1016/j.ehj.2018.05.001

Steg, P. G., Goldberg, R. J., Gore, J. M., Fox, K. A., Eagle, K. A., Flather, M. D., . . . Anderson, F. A. (2002). Baseline characteristics, management practices, and in-hospital outcomes of patients hospitalized with acute coronary syndromes in the Global Registry of Acute Coronary Events

(GRACE). The American Journal of Cardiology, 90(4), 358-363.

Wan, K., Zhao, J., Huang, H., Zhang, Q., Chen, X., Zeng, Z., Zhang, L., & Chen, Y. (2015). The Association between Triglyceride/High-Density Lipoprotein Cholesterol Ratio and All-Cause Mortality in Acute Coronary Syndrome after Coronary Revascularization. *PLOS ONE*, *10*(4), e0123521. https://doi.org/10.1371/journal.pone.0123521

Zubaid, M., Rashed, W., Al-Khaja, N., Almahmeed, W., Al-Lawati, J., Sulaiman, K., Al-Motarreb, A., Amin, H., Al-Suwaidi, J., & AlHabib, K. F. (2008). Clinical presentation and outcomes of acute coronary syndromes in the gulf registry of acute coronary events (Gulf RACE). *PubMed*, *29*(2), 251–255. https://pubmed.ncbi.nlm.nih.gov/18246236

Zubaid, M., Rashed, W., Almahmeed, W., Al-Lawati, J., Sulaiman, K., Al-Motarreb, A., Amin, H., Suwaidi, J. A., & AlHabib, K. F. (2009). Management and outcomes of Middle Eastern patients admitted with acute coronary syndromes in the Gulf Registry of Acute Coronary Events (Gulf RACE). *Acta Cardiologica*, *64*(4), 439–446. https://doi.org/10.2143/ac.64.4.2041607