

DIFFERENCE IN LIPID LEVELS; AMONG ISCHEMIC AND HEMORRHAGIC STROKE PATIENTS AT CIVIL HOSPITAL KARACHI

ORIGINAL
PROF-2068

DR. TAZEEN RASHEED

Registrar, Department of Medicine
Dow University Hospital & Civil Hospital Karachi

DR. KHALID IMRAN

Associate Professor of Medicine
Dow University Hospital & Civil Hospital Karachi

DR. MUHAMMAD TANVEER ALAM

Assistant Professor of Medicine
Dow University Hospital & Civil Hospital Karachi

Dr. Muhammad Aurengzeb

Assistant Professor of Medicine
Dow University Hospital & Civil Hospital Karachi

Prof. Dr. Rana Qamar

Professor of Medicine
Dow University Hospital & Civil Hospital Karachi

Dr. Pawan Kumar

Registrar, Department of Medicine
Dow University Hospital & Civil Hospital Karachi

ABSTRACT... Objectives: To determine the frequency of dyslipidemias in patients with stroke and to compare the lipid levels in ischemic and hemorrhagic stroke patients. **Study design:** An observational study. **Setting:** Medical wards of Civil Hospital Karachi. **Period:** January 2010 to June 2011. **Methodology:** A total of three hundred and fifty-five patients above the age of 18 years with clinical evidence of stroke. CT scan brain and fasting lipid levels were done in all patients. The lipid levels were compared between the ischemic and hemorrhagic stroke patients. Data was analyzed with SPSS version 16.0. **Results:** Out of the 355 patients 161 (45.4%) had dyslipidemia. Among the dyslipidemic patients, there was not a statistically significant difference in serum cholesterol, triglycerides, and LDL and HDL levels between ischemic and hemorrhagic stroke. (p -value > 0.05). **Conclusions:** There is a high frequency of dyslipidemia in stroke patients. While comparing ischemic and hemorrhagic strokes there was not a significant difference between the various lipid fractions.

Key words: Stroke, hemorrhagic stroke, ischemic stroke, dyslipidemias, cholesterol, HDL cholesterol, LDL cholesterol.

INTRODUCTION

Stroke is the third most common cause of death in the developed world after cancer and ischemic heart disease, and is the most common cause of physical disability¹. In America the mortality from stroke is 150,000/year. Three million Americans are currently permanently disabled from stroke². Estimated stroke incidence in Pakistan is closer to 250 per 100,000 population³. It is potentially the most devastating consequence of vascular disease short of death, causing serious long-term disability and incurring extremely high medical and financial costs⁴.

Risk factors for stroke include hypertension, diabetes, hyperlipidemia, cigarette smoking, cardiac disease, AIDS heavy alcohol consumption, family history of stroke. Dyslipidemia is a well known risk factor for atherosclerosis and hypercholesterolemia is a risk factor for CVA⁵.

The economic consequences of stroke are huge in terms of health care costs. In terms of human suffering, the effects of stroke are even greater. Thus, measures to

prevent stroke have huge implications for society and steps should be taken to control the risk factors in order to lessen the likelihood of a potentially disabling or fatal brain injury.

Various studies have been done on dyslipidemias and the findings indicate that dyslipidemia is prevalent worldwide, and places an enormous burden on the health care system. The metabolic consequences associated with changes in diet and lifestyle has increased the number of hyperlipidemic individuals who are at risk of a number of adverse effects such as stroke. The determination of the prevalence of dyslipidemia in stroke patients will allow evaluation of current contribution of this factor to stroke and lead to adequate planning by health care professionals in emphasizing means to prevent increased lipid levels, thereby reducing its associated complications.

PATIENTS & METHODS

This observational study was conducted in Civil Hospital Karachi from January 2010 to June 2011. Three hundred and fifty five patients of stroke above the age of 18 years,

of either sex, admitted in the Medical wards of Civil Hospital Karachi were included in the study. Patients taking drugs causing dyslipidemia (oral contraceptives, diuretics, B-blockers), lipid lowering drugs, patients with a past or recent history of hypertension, diabetes mellitus were excluded. The lipid levels were compared between the ischemic and hemorrhagic stroke patients. T test was applied to compare mean significant difference between ischemic and hemorrhagic stroke for age and lipid profile. Chi-square test was also applied to compare proportion difference between ischemic and hemorrhagic stroke for gender and dyslipidemia. $P \leq 0.05$ was considered significant.

RESULTS

A total of 355 patients with clinical evidence of stroke were included in this study. The average age of the patients was 59.5 ± 11.1 years (95%CI; 58.3 to 66.7). Out of 355 stroke patients, 217(61%) were males and 138(39%) were females. 257(72.4%) cases had ischemic stroke and 98(27.6%) suffered hemorrhagic stroke. Out of 257 ischemic stroke, 165(64.2%) were males and 92(35.8%) were females while in 98 hemorrhagic stroke 52(53.1%) were males and 46(46.9%) were females. Proportion of gender difference was not statistically significant between ischemic and hemorrhagic stroke ($p=0.054$).

Out of the total of 355 patients 161 were dyslipidemic. Comparison of dyslipidemia between ischemic and hemorrhagic stroke patients (Table I). Comparison of average age, serum cholesterol, triglyceride, HDL and LDL between ischemic and hemorrhagic stroke showed that there was not a statistically significant difference in age, serum cholesterol, triglyceride levels between ischemic and hemorrhagic stroke. Average HDL level were 38.9 ± 5.8 mg/dl in patients with hemorrhagic stroke as compared to 40.5 ± 5.8 mg/dl in patients with ischemic stroke. HDL level were significantly low in patients with hemorrhagic than ischemic stroke ($p=0.03$). Average LDL levels were $114.1 + 50.3$ mg/dl in patients with hemorrhagic stroke as compared to $102.8 + 38.3$ mg/dl in patients with ischemic stroke. LDL levels were significantly high in patients with hemorrhagic than ischemic stroke ($p=0.02$).

Comparison of age, lipid profile of dyslipidemic patients between ischemic and hemorrhagic stroke are presented in table II which shows that there was not a statistically significant difference between age, serum cholesterol, triglyceride, LDL and HDL cholesterol levels of ischemic and hemorrhagic stroke patients (P -value > 0.05).

Table-I. Comparison of dyslipidemia between ischemic and hemorrhagic stroke

Dyslipidemia	Ischemic stroke n=257	Hemorrhagic stroke n=98
Yes	110 (42.8%)	51 (52.1%)
No	147 (57.2%)	47 (47.9%)

Table-II. Comparison of age and lipid profile of dyslipidemic patients between ischemic and hemorrhagic stroke

Variables	Dyslipidemic patients n=161		P-values
	Ischemic stroke n=110	Hemorrhagic stroke n=51	
Age (year)	57.3 ± 11.25	56.5 ± 11.5	0.68
Serum cholesterol (mg/dl)	199.5 ± 46.3	198.1 ± 70.4	0.88
Serum Triglyceride (mg/dl)	158.3 ± 74.3	141.3 ± 51.4	0.14
HDL (mg/dl)	37.2 ± 6.9	35.6 ± 5.8	0.14
LDL (mg/dl)	129.2 ± 44.6	139 ± 59.0	0.23

DISCUSSION

Our study dyslipidemia was found in a high frequency of stroke patients. However this study was done in a setup which caters to patients mostly belonging to low socio-economic group. Out of these 355 patients 217 (61%) were males and 138 (39%) were females and mean age of the patients was $59.5 + 11.1$ years. 257 (72.4%) of the patients had ischemic stroke and 98 (27.6 %) patients had hemorrhagic stroke. These results were similar to a study conducted in Sindh Government Qatar Hospital Karachi by Hasan SR et al in which 74.4 % of the patients had ischemic stroke and 25.5 % patients had hemorrhagic stroke⁶.

Out of the 355 patients 161 (45.4%) had dyslipidemias. This is in contrast to the above-mentioned study by Hasan SR et al in which 18.8 % of the patients were found to be dyslipidemic. However in this study only 90 patients of stroke were studied. Another study conducted by Smith EE et al done to determine the serum lipid levels on admission in ischemic stroke patients found that 27 % patients with ischemic stroke had LDL levels greater than recommended by NCEP-ATP III guidelines⁷. The reasons for the high lipid levels in our patients could be multi factorial including failure to screen, diagnose and treat dyslipidemias, lack of access to adequate health care facilities, noncompliance on the part of patients due to cost of the drugs.

Out of the dyslipidemic patients 110 patients (42.8%) had ischemic stroke and 51 patients (52.1%) had hemorrhagic stroke. However this difference was statistically not significant (P=0.118). Epidemiological studies have provided conflicting findings regarding the association of dyslipidemia with ischemic stroke. Overall, elevated LDL-C levels appear to increase the risk of ischemic stroke. Low HDL-C levels also appear to be associated with a greater risk whereas the importance of high triglyceride levels is less clear^{8,9}.

In our study ,HDL levels were significantly lower in patients with hemorrhagic than ischemic stroke and LDL levels were significantly higher in patients with hemorrhagic stroke whereas in the study by Sulehria et al¹⁰ these differences were statistically insignificant. However in the study by Sulehria et al only 40 patients of stroke were studied.

Among the dyslipidemic patients, there was not a statistically significant difference in age, serum cholesterol, TG, LDL and HDL levels between ischemic and hemorrhagic stroke. (P value > 0.05). This is in contrast to a study by Trischwell DL et al in which high total cholesterol and low HDL cholesterol levels were associated with increased risk of ischemic stroke and low levels of total cholesterol were associated with increased risk of hemorrhagic stroke¹¹. However, in the above mentioned study by Trischwell et al hypertensive patients were included whereas in our study they were excluded.

In clinical trials cholesterol lowering therapy has shown to reduce the risk of stroke¹². It has also been found that lowering of cholesterol concentration by statins reduce the risk of stroke and TIA¹³.

Stroke guidelines from many of the Asian countries have recommended using statins for patients with previous ischemic stroke or TIA. There is a need to educate Asian physicians and patients about the importance of adequate control of hypercholesterolemia¹⁴. Survivors of a stroke or TIA are at an increased risk of another stroke, which is a major cause of morbidity and mortality¹⁵. Stroke is a major cause of death and disability. Control of risk factors--particularly hypertension, diabetes, elevated serum lipids, and atrial fibrillation--can significantly reduce the incidence of stroke¹⁶. Stroke is a major health problem and as population ages its significance grows¹⁷ and because it causes substantial morbidity and mortality therefore control of risk factors remain the most important means of reducing the incidence of stroke.

CONCLUSIONS

Identifying and treating different risk factors of stroke would decrease the likelihood of potentially disabling or fatal brain injury. Dyslipidemia is an important risk factor for stroke, therefore detection and treatment of dyslipidemia will result in prevention of a large number of strokes.

Copyright© 09 Oct, 2012.

REFERENCES

1. Allen CMC, Lueck CJ, Dennis M. Neurological Disease In: Boon NA, Colledge NR, Walker BR. **Davidson's principles and practice of medicine**. London: Churchill Livingstone;2002.p.1145-256
2. Chamberlain SL, Narins B. Stroke. In: **The gale's encyclopedia of neurological disorders**. USA . Thomson Gale 2005;2:804-8
3. Nasrullah, Kasuri N, Ikram A, Zafar N, Khan A. **Information about stroke**. 14th annual meeting. Lahore: Pakistan. Society of Neurology, 2007
4. Buckley BM. **Lipids and stroke**. British journal of diabetes and vascular disease.2003;3(3).

5. Aminoff MJ. **Nervous system disorders.** In:McPhee SJ, Papadakis MA.Current medical diagnosis and treatment.USA: McGraw Hill;2010.p.872-936.
6. Hasan SR, Ghouri AS. **Frequency of known risk factors of stroke and its outcome in patients admitted in Sindh Government Qatar Hospital Karachi.** Pak J Med Sci 2007;23:634-6.
7. Smith EE, Abdullah AR, Amirfarzan H, Schwamm LH. **Serum lipid profile on admission for ischemic stroke, failure to meet National Cholesterol Education Program Adult Treatment Panel (NCEP- ATP III) guidelines.** Neurology 2007;68.660-5.
8. Wolf PA. **Lipids and ischemic stroke.** Journal watch neurology, 14 -11-2006.
9. Tziomalos,Konstantinos, Athyros, Vasilios, Karagiannis,Asterios, Mikhailidis et al. **Dyslipidemias as a risk factor for ischemic stroke.Current topics in medicinal chemistries.** Volume 9.Number 14, October 2009 , pp. 1291-1297(7).
10. Sulehria SB, Asrar A, Qureshi IH. **Comparison of lipid profile in Thrombotic and hemorrhagic stroke patients.** Annals 2005;4:482-4.
11. Trichwell DL, Smith NL, Heckbert SR, Lemaitre RN, Longstreth WT, Psaty BM. **Association of cholesterol with stroke risk varies in stroke subtypes and patient subgroups.** Neurology 2004;63:1868-75.
12. Gaspardone A, Arca M. **Atorvastatin :its clinical role in cerebrovascular prevention.** Drugs. 2007; 67 suppl 1:55-62
13. Ameranco P, Labreuche J. **Lipid management in the prevention of stroke: review and updated meta-analysis of statins for stroke prevention.** Lancet Neurol 2009 May;8(5):453-63.
14. Hanket GJ, Wong KS, Chankrachang S, Chen C, CrimminsD, Frayne J et al. **Management of cholesterol to reduce the burden of stroke in Asia: consensus statement.** Int J Stroke. 2010 June;5(3):209-16.
15. Sacco RL. Adams R, Alberts MJ, Furie K, Gorelick P,Harbaugh R. **Guidelines for prevention of stroke in patients with ischemic stroke or transient ischemic attack.** Stroke 2006;37:577.
16. Wenberger J. **Stroke and TIA prevention and management of cerebrovascular events in primary care.** Geriatrics. 2002 Jan;57(1):38-43.
17. Ingall T. **Stroke incidence, mortality, morbidity and risk.** J Insur Med. 2004; 36(2):143-52.

Article received on: 24/08/2012

Accepted for Publication: 09/10/2012

Received after proof reading: 05/11/2012

Correspondence Address:

Dr. Tazeen Rasheed
H.No. A-492, Block-7
Ghulistan-E-Johar Karachi.
tazeen_rasheed_khi@hotmail.com

Article Citation:

Rasheed T, Imran K, Alam MT, Aurengezeb M, Qamar R, Kumar P. Difference in lipid levels; among ischemic and hemorrhagic stroke patients at Civil Hospital, Karachi. Professional Med J Dec 2012;19(6): 859-862.

“If you can't change your fate,
Change your attitude.”

Dr. Reda Bedeir