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Lipid Profile Pattern In Hemorrhagic Stroke - A Study From Osmania General Hospital

KEYWORDS: Lipid profile,stroke,intracerebral hemorrhage.

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ABSTRACT ***Objective:*** *To study the lipid profile pattern in hemorrhagic stroke.*

Materials and methods: *This is observational study conducted on 100 patients diagnosed with hemorrhagic stroke who were admitted to Osmania General Hospital from 2014-16.A detailed history, physical examination and outcome details were collected from the hospital medical records. Data regarding fasting lipid profile,computed tomography (CT) or magnetic resonance imaging (MRI) brain reports were collected from medical records.NCEP/ATP-III guidelines were followed.*

Results : *Majority of the patients were males(n= 73).Most of the patients were of age > 50 years (n= 72) .Most of them are hypertensives (n= 76).Number of alcoholics and smokers were similar (n= 48 , n = 41).Number of patients with 2 or more risk factors is n = 46.Most common site of bleed was capsuloganglionic region(n= 69). Total number of deaths n = 16(16%). Of these deaths n=12 were capsuloganglionic bleeds.Number of patients with low HDL-C (< 40mg/dl) were n= 56, total cholesterol (< 200mg /dL) n=87, LDL-c level (<100 mg/dL) n= 64, triglycerides level (< 150 mg/dL) were n=71.*

Conclusion : *The present study concludes that desirable levels of total cholesterol ,LDL-cholesterol, triglycerides and low HDL-cholesterol are associated with the intracerebral hemorrhage.*

INTRODUCTION -

The stroke, or cerebrovascular accident, is defined by abrupt onset of neurologic deficit that is resulting from diseases of the cerebral vasculature and its contents.1Strokes are broadly categorized as ischemic or hemorrhagic. Ischemic stroke is due to occlusion of a cerebral blood vessel and causes cerebral infarction. Hemorrhagic stroke may be due to haemorrhage either within the substance of the brain, or subarachnoid spaces and ventricular system.2

Risk factors for stroke include hypertension, diabetes mellitus,smoking,hyperlipidemia ,and atherosclerotic disease,atrial fibrillation,drugs such as warfarin and aspirin .Treatment of hypertension, cessation of smoking, treament of hyperlipidemia leads to relative risk reduction of stroke by 38%,50%,16-30% respectively. 3Spontaneous intra-cerebral haemorrhage (ICH) is the deadliest, most disabling and least treatable form of stroke. Following a major haemorrhage, 35% to 52% are dead within a month and less than 20% were living independently after 6 months.4Subarachnoid hemorrhage accounts for approximately 5 percent of all strokes,with median age at death being 59 years for subarachnoid hemorrhage, 73 years for intracerebral hemorrhage, and 81 years for ischemic stroke. Intracranial hemorrhage is responsible for 10 to 15 percent of all stroke deaths but for more than one-third of the years of life lost before age 65 due to the younger age distribution of intracerebral hemorrhage.5 Intraparenchymal or intracerebral hemorrhage may occur as a complication of ischemic stroke, termed hemorrhagic conversion, or as the primary injury without preceding ischemia. 70 percent of patients with intracerebral hemorrhage have a history of hypertension and is a modifiable risk factor for stroke.6,7,8 Other risk factors for intracerebral hemorrhage include age, race, substance abuse, anticoagulation, platelet dysfunction, and vascular and structural anomalies, heavy alcohol and thrombolytic agents.9,10Rates of intracerebral hemorrhage increase with age.11 Cocaine and amphetamine use is associated with increased risk, possibly because of transient severe hypertension.Arteriovenous malformations, abnormal complexes of arteries and veins in brain parenchyma, account for 5 percent of intracerebral hemorrhages. Thrombolytic agents used for ischemic stroke and myocardial infarction cause intracerebral hemorrhage in some cases.7

MATERIAL AND METHODS:

This is observational study conducted on 100 patients diagnosed with hemorrhagic stroke who were admitted to Osmania General Hospital from 2014-16.A detailed history, physical examination and outcome details were collected from the hospital medical records. Data regarding fasting lipid profile,computed tomography (CT) or magnetic resonance imaging (MRI) brain reports were collected from medical records.NCEP/ATP-III guidelines were followed.

RESULTS:

Number of males were n=73 and females were n=27. Number of patients with age < 50 years n=28 and age >50 years were n=72. Mean age in this study is 55.7 +/-12.6 years.Number of patients with risk factors like hypertension n=76(76%); diabetes n=20(20%), smoking n= 41 (41%); alcoholism n= 48 (48%). Patients with 2 or more risk factors were n=46 (46%) as shown in figure 1.The site of bleed-capsuloganglionic n=69, thalamic n=12,frontoparietal n=8 ,other n=11.Total number of deaths n = 16(16%). Of these deaths n=12 were capsuloganglionic bleeds.Number of patients with low HDL-C (< 40mg/dl) were n= 56, total cholesterol (< 200mg /dL) n=87, LDL-c level (<100 mg/dL) n= 64, triglycerides level (< 150 mg/dL) were n=71 as shown in figure 2.

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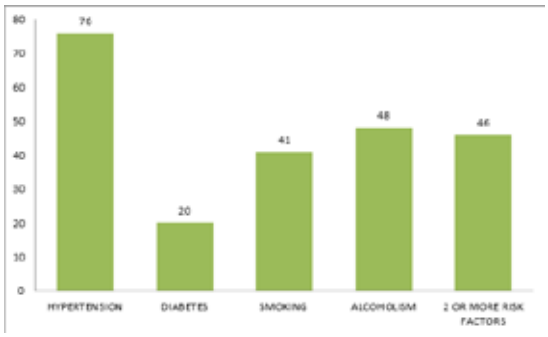

Figure 1:Risk Factors

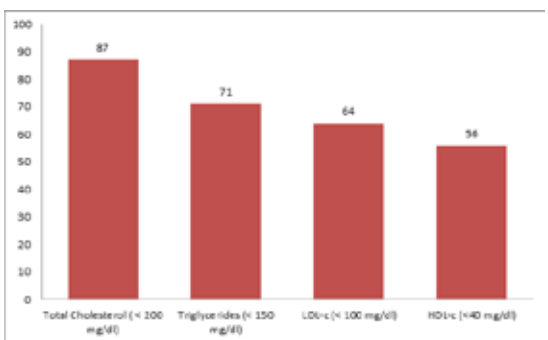

Figure 2 : Lipid Profile

DISCUSSION : Intracerebral hemorrhage is a devastating disease with no curative treatment options12,13. Identification of modifiable risk factors is highly important.Abnormalities of serum lipids are major risk factors for coronary heart disease and most recently established as risk factor in cerebrovascular disease.14 Low levels of serum total cholesterol was recognized as a possible risk factor for intracerebral hemorrhage. 15Low total cholesterol levels also relate to the presence of cerebral microbleeds,16,17which are thought to be asymptomatic precursors of symptomatic intracerebral hemorrhage.The exact role of cholesterol in the pathogenesis of intracerebral hemorrhage is vague.18-20Cholesterol and fatty acids are essential elements of all cell membranes.It has been hypothesized that very low cholesterol levels may contribute to the development of a fragile endothelium, prone to leakage and rupture.18 Recent evidence suggests that the association between total cholesterol levels and risk of intracerebral hemorrhage is mainly determined by low triglyceride levels.21,22Several studies have suggested that high triglyceride levels leads to a prothrombotic state because they are positively correlated with the vitamin K-dependent coagulation factors VII and IX, and with plasminogen activator inhibitor and blood viscosity.23 Likewise, that low triglyceride levels may result in a prohemorrhagic state.18

Conclusion - The present study concludes that most of the hemorrhagic strokes are intraparenchymal,common in male sex with age more than 50 years. More than 80% of hemorrhagic strokes are associated with low levels of HDL-c,LDL-c,triglycerides and total cholesterol.Most common site of bleed is capsuloganglionic area.

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Conflict of interest –None

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