STROKE; 
EVALUATION OF RISK FACTORS, CLINICAL MANIFESTATIONS, AND DIAGNOSTIC OUTCOME

Capt. Dr. Faraz Ahmed1, Dr. Muhammad Danish Ajaz2, Dr. Muhammad Iqbal3

ABSTRACT… Objective: To determine the risk factors, clinical manifestations, and diagnostic outcome of stroke among patients admitted in CMH Jhelum. Study design: Descriptive case series. Place and duration of study: Medicine Department Combined Military Hospital Jhelum Cantonment from January 2013 to February 2014. Material and methods: A sample size of 200 was obtained with an equal number of male and female patients. After formal consent a detailed history was taken regarding hypertension, diabetes mellitus, smoking, and Performa was filled. Investigations like Fasting blood sugar, serum cholesterol, and CT scan brain were also done, other relevant data like name, age, gender, and address, were collected. Patient admitted with clinical presentation of stroke later being diagnosed on CT scan brain as ischemic or hemorrhagic were included. Stroke secondary to vascular lesions, space occupying lesions, and blood dyscrasias were excluded from study because these cases would act as effect modifier and interfere with results, thus producing bias in this study. Results: A total number of 200 patients were included in this study with an equal ratio of male and female. Range of age group was 40 to 80 years while mean age group involved was 70.01 ± 13.02 years old. Most common clinical manifestations were weakness of right half of the body that is 51.5%, weakness left half 25%, and coma 13.5%. Hypertension found to be leading risk factor of stroke with 58.5%, while diabetes found in 24.5%, smoking 8%, obesity 5%, and high cholesterol in 4% of patients. Diagnostic outcome was ischemic stroke in most of the patients (71%) and hemorrhagic stroke in 29%. Conclusion: Modifiable risk factors such as hypertension, diabetes, smoking, obesity and high cholesterol are found to the key risk factors. These can be easily controlled by life style modification and effective medication therapy resulting a significant reduction the morbidity and mortality of stroke.

Key words: Stroke, Clinical Manifestations, Etiologies

INTRODUCTION
Stroke is the sudden onset of loss of brain functions which is mainly cause by underlying presence of vascular disturbances of brain. Ischemic stroke is the result of vascular occlusion due to formation of thrombosis which leads to embolism and ultimate result is the vascular occlusion. Stroke can also be caused by hemorrhage of arterial supply to the brain. As a result, the affected area of the brain is unable to perform its normal functions, leading to inability to move one or more limbs, inability to understand or formulate speech, inability to see one side of visual field. Stroke is the second most common cause of death and major cause of disability worldwide.1

Stroke is always considered to be a medical emergency that may cause lifelong disability and other complications which may later on leads to death. The common risk factors contributing in stroke are increasing age, chronic hypertension, uncontrolled diabetes mellitus, smoking, obesity, and Dyslipidemia. But on the other hand, hypertension is labeled as the most common predisposing factor for stroke whether is ischemic or hemorrhagic and second common being the diabetes mellitus.2

Previously conducted hospital based studies from our region has shown that more than 40% of the stroke cases were due to hemorrhage while rest were due to underlying presence...
of ischemia of brain. There are not much data available which shows recent accurate incidence of stroke in Pakistan but conclusive estimation from previously published studies documented to be around or more than 350,000 per annum and the prevalence, based on a trial on the subject, was 6.4%.3,4

Diagnosis of stroke is purely based on patient’s clinical presentation along with supportive evidence from history and physical examination and the confirmatory diagnosis will be made using Computed Tomography (CT) and/or Magnetic Resonance Imaging (MRI) of the brain.5 CT scan is more preferred during the acute stage of stroke than MRI due to its cost effectiveness and because MRI brain usually cannot detect intracranial hemorrhage during the first 48 hours of a bleeding episode.6,7

The main purpose of this study was to determine incidence of stroke in various age groups and the influence of known risk factors a contributive element for the morbidity of the disease in the said groups.

OBJECTIVE
To determine the risk factors, clinical manifestations and diagnostic outcome of stroke among patient admitted in CMH Jhelum

MATERIAL AND METHODS
This descriptive study was conducted at department of medicine, Combined Military Hospital (CMH), Jhelum during the period of January 2013 to February 2014.

Patients admitted with clinical presentation of stroke later being diagnosed on CT scan brain as ischemic or hemorrhagic of either gender and age were included in this study. Stroke secondary to vascular lesions, space occupying lesions, and blood dyscrasias were excluded from study because these cases would act as effect modifier and interfere with results, thus producing bias in this study.

DATA COLLECTION PROCEDURE
Administrative permission was taken from concerned authorities. Patients were taken from indoor department admitted at hospital. After formal consent a detailed history was taken regarding hypertension, diabetes, smoking, and Performas were filled. Investigations like Fasting blood sugar, serum cholesterol and CT scan brain were done, other relevant data like name, age, gender, address and other particulars were collected. Confidentiality of the patient was maintained. Data was entered and analyzed through Statistical Package for the Social Science (SPSS v. 16).

RESULTS
A total of 200 patients were obtained with an equal number of male and female patients, to achieve accurate statistical evaluation regarding incidence of stroke among male and female patients of various age groups. The age of patients ranged from 40-80 years. Mean age group was found to be 70.01 ± 13.02 years.

Out of 200 patients majority had clinical presentation of right sided body weakness 103 (51.5%) Table No: I. Table No: II. Shows most common underlying risk factors of stroke, among them 58.5% (N = 117) had stroke due to hypertension.

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<tr>
<th>Clinical Manifestations</th>
<th>Frequency</th>
<th>Percent</th>
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<tr>
<td>Weakness right side</td>
<td>103</td>
<td>51.5</td>
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<tr>
<td>Weakness left side</td>
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<td>25</td>
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<td>Vomiting</td>
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<td>Fits</td>
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<tr>
<td>Aphasia</td>
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<td>Coma</td>
<td>27</td>
<td>13.5</td>
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<td>Total</td>
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<table>
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<tr>
<th>Risk Factors</th>
<th>Frequency</th>
<th>Percent</th>
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<tr>
<td>Hypertension</td>
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<tr>
<td>Diabetes</td>
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<tr>
<td>Dyslipidemia</td>
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Table-I. Clinical manifestations of patients admitted with stroke

Table-II. Most common underlying risk factors of stroke
Most of the patients, 142 (71%) presented with ischemic whereas 58 (29%) of the patients had hemorrhagic stroke as illustrated in Fig-01.

DISCUSSION
Both types of stroke such as ischemic and hemorrhagic are the major cause of hospitalization and its associated mortality in Asian countries, and now become the second most important cause of stroke associated mortality all over the world.\(^9\) A vast majority of population from developed world (85%) the cause of stroke is ischemic while hemorrhagic stroke accounts for only remaining 15% of the population. On the contrary, hemorrhagic stroke is more common in Southeast Asian countries and the accounted incidence from Malaysia, Indonesia, Korea and Pakistan is, 34%, 26%, 33%, and 34%, respectively with an almost identical incidence of the said disease.\(^{10}\) Various hospital based studies has been conducted in Pakistan which show that 30 - 40% of stroke cases are secondary to hemorrhage while the remaining are due to ischemic causes.\(^{11,12}\)

In our study we have found that majority (71%) of stroke cases were due to underlying presence of ischemia and remaining 29% were due to hemorrhage and among them most common risk factor of stroke was high blood pressure. One of a most common reason behind our observation is that previously published data supports the direct relationship between high blood pressure and the risk of stroke irrespective of age and gender but the strongest association being with systolic blood pressure. There is an estimated 25% increase risk of stroke with each 10 mmHg rise in systolic blood pressure and with diastolic blood pressure of more than 110 mm Hg have 15 times more risk than the patient with blood pressure less than 80 mmHg.\(^{13}\)

Only by managing one modifiable risk factor (hypertension), there is a decrease chance of stroke by about 38%.\(^{14}\) In this study the percentage of Hypertension among the patients was 58.5% which is similar to 60% as in other study.\(^{15}\) The mean age group involved was 70 years.

According to other hospital based studies carried out in Pakistan shows that diabetes is an independent predictor of ischemic stroke in women, subsequent studies shows that diabetes increases the incidence of stroke by two folds.\(^{16}\) In our study diabetes was found in (24.5%) of patients, similar finding have been reported in various local studies and are consistent.\(^{17}\)

High cholesterol increases stroke risk by causing an increased risk of thrombus formation and affects related to artherosclerosis. Treatments for patients with established stroke are relatively ineffective but controlling the risk factors is the real hope of reducing stroke morbidity and mortality in population.\(^{18}\)

Among the various clinical manifestations of the Stroke perhaps the most common is the weakness on either side of the body. In this study it is found that majority of the patients suffered from weakness of the right side of the body. This finding is also consistent among other studies.

The study also shows the Diagnostic outcome of stroke as opposed to gender and age. It is important to note that with the proper clinical intervention and life style modification the occurrence of disability and death due to stroke can be effectively reduced.

CONCLUSION
Modifiable risk factors such as hypertension,
diabetes, smoking, obesity and high cholesterol level are found to be the key risk factors. These can be easily controlled by lifestyle modification and effective medication therapy resulting in a significant reduction in the morbidity and mortality of stroke.

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REFERENCES


5. Rehman SU, Khan MA. Clinical versus CT Scan diagnosis in stroke: a comparative study of 50 cases.


AUTHORSHIP AND CONTRIBUTION DECLARATION

<table>
<thead>
<tr>
<th>Sr. #</th>
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<td>1</td>
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<td>3</td>
<td>Dr. Muhammad Iqbal</td>
<td>Critical Scientific review &amp; final approval</td>
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