

# CT SCAN FINDINGS AND RISK FACTORS IN PATIENTS PRESENTING WITH STROKE

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## ABSTRACT

**Background:** Cerebrovascular accident or stroke is one of the three leading causes of death globally. Differentiation between cerebral infarction and haemorrhage is important because management depends on the correct diagnosis. There are many risk factor which predispose a person to stroke. The objective of this study was to know the frequency of cerebral haemorrhage and infarction in stroke patients and to know the risk factors for stroke in our community.

**Material & Methods:** This descriptive study was conducted on 47 patients of stroke admitted at DHQ Teaching Hospital, D.I.Khan, Pakistan, from November 2011 to April 2012. Patients of any age who developed focal neurological event lasting more than 24 hours, due to vascular event in the brain were included. Those with any other cause for focal neurological deficit were excluded. The data was collected on proforma and descriptive statistics applied to analyze the data.

**Results:** The mean age of patients was  $54.5 \pm 9.66$  years with a range of 17-75 years. Out of 47 patients 21 were males and 26 females. CT scan of brain showed 26(55.31%) cases of cerebral infarction and 21(44.68%) intracranial haemorrhage. Regarding risk factors, 37 patients were hypertensive, 9 had ischemic heart disease and 6 had diabetes mellitus.

**Conclusion:** In our study, among patients with stroke, 45% were having intracranial haemorrhage, while 55% cerebral infarction. Hypertension was the most common risk factor, followed by ischemic heart diseases and diabetes mellitus.

**KEY WORDS:** CT scan; Stroke; Hypertension; Ischemic heart disease; Diabetes mellitus.

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## INTRODUCTION

Cerebrovascular accident (CVA) or stroke is one of the three leading causes of death in the world along with cancer and heart disease.<sup>1</sup> Between 1990 and 2010 the number of strokes decreased by approximately 10% in the developed world but increased in the developing world. Overall two thirds of strokes occur in those over 65 years of age.<sup>2,3</sup>

Distinction between intracerebral haemorrhage and infarction is important because proper management of acute stroke syndrome is based on the correct diagnosis of the pathological type. Computed tomography (CT) is an accurate, safe and noninvasive procedure to differentiate between cerebral infarction and hemorrhage.<sup>4</sup> It also shows

the correct site of the lesion and is superior to MRI for detecting the intracranial haemorrhage of less than 48 hour duration.<sup>5</sup>

Although the classical features of intracerebral haemorrhage e.g. sudden-onset of severe headache, vomiting, rapid deterioration of consciousness and lack of previous transient ischemic attacks are reasonably specific for haemorrhage, yet CT scan is sensitive for smaller peripheral haemorrhages that carry a better prognosis for survival and functional recovery.<sup>6</sup> The reported incidence of intracranial haemorrhage is very high more than 40% in developing countries. This is in contrast to the 5-20% in the developed countries.<sup>7</sup>

Stroke can be prevented by treating important risk factors. Hypertension is an important risk factor for stroke, both intracranial haemorrhage and cerebral infarction. Its poor control may be an important reason for the high incidence of intracranial haemorrhage in our part of the world.<sup>8-10</sup>

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The incidence of stroke in the Western world is decreasing. This is because of better health care, proper control of hypertension, and better management of other risk factors like heart diseases and diabetes mellitus. This study will help in the management of stroke patients.

The objective of this study was to know the frequency of cerebral haemorrhage and infarction in stroke patients and to know the major risk factors for stroke in our community.

**MATERIAL AND METHODS**

This was a descriptive study conducted at Department of Medicine, DHQ Teaching Hospital, D.I. Khan, Pakistan, from November, 2011 to April, 2012. A sample size of 47 patients was selected by purposive sampling technique. All patients with focal neurological deficit due to vascular event in the brain were included in the study. Those with focal neurological signs due to space occupying lesions on CT scan were excluded from the study.

History and clinical examination were recorded and all the findings were entered into a proforma. The demographic variables were gender and age in years. The research variables were hypertension, ischemic heart disease and diabetes mellitus. Descriptive statistics were applied to analyze the data.

**RESULTS**

The mean age of patients was 54.5+9.66 years, with a range of 17-75 years. Out of 47 patients 21 were males and 26 females, with a male to female ratio of 1:1.2.

CT scan of brain showed 26 (55.31%) cases of cerebral infarction and 21 (44.68%) intracerebral haemorrhage.

In regard to risk factors, 37 patients were having hypertension, 9 ischemic heart disease, and 6 diabetes mellitus. (Table 1)

**DISCUSSION**

We found in this study that the percentage of

**Table 1: Frequency of risk factors among patients with stroke (n=47).**

Findings of CT scan	Risk Factors		
	Hypertension	Ischemic Heart disease	Diabetes Mellitus
Infarction	18	7	4
Haemorrhage	19	2	2
Total	37	9	6

intracerebral haemorrhage and infarction varied considerably from the studies in developed countries but varied little from the studies conducted in the developing countries like Thailand and India. Cerebral haemorrhage is found in 20% of the patients with stroke in developed countries but in developing countries, like Pakistan haemorrhage is quite common, partly because of poorly controlled hypertension.<sup>11,12</sup>

Haemorrhage was present in 40.8% and Cerebral infarction in 50% in a study from Swat district by Mumtaz et al<sup>13</sup> which is similar to our study in which cerebral infarction was present in 55.31% and cerebral haemorrhage in 44.68%. In our study the frequency of cerebral infarction and cerebral haemorrhage were similar to the study conducted in Thailand showing 40-50% cases of cerebral haemorrhage and 50-60% cases of cerebral infarction. Also in a study from India the percentage of intracerebral haemorrhage and infarction was similar to those of ours i.e. 42.5% for haemorrhage and 57.5% for infarction.<sup>14</sup>

In our study hypertension was the commonest risk factor present in 78.72% of patients followed by ischemic heart disease in 19.14% and diabetes mellitus in 12.76%, which is similar to that of the study by Mumtaz et al<sup>13</sup> in which hypertension was present in 75% of patients followed by ischemic heart diseases and diabetes mellitus. In our study, hypertension was the most common risk factor, not only in haemorrhage but also in cases of cerebral infarction. This finding is similar to a study by Thacker et al from India.<sup>15</sup>

**CONCLUSION**

In our community, among patients with stroke, 45% are having intracranial haemorrhage while 55% cerebral infarction. Hypertension is the most common risk factor, followed by ischemic heart diseases and diabetes mellitus.

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CONFLICT OF INTEREST  
Authors declare no conflict of interest.  
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