

NORMAL CT IN CEREBROVASCULAR DISEASE

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SUMMARY

A CT study of cerebrovascular disease conducted over a period of six months, in the Department of Radiology at PGMI, Lady Reading Hospital Peshawar is presented. The age of patients varied from three to hundred years, 51.36% were females and 48.64% were males. In 19.56% of cases CT study was normal.

INTRODUCTION

Cerebrovascular disease is the most prevalent neurologic disorder in terms of both morbidity and mortality. The incidence of stroke is 1-2 per 1000 population per annum¹ in Europe and the USA, but is higher in the Afro-Caribbean population. It is the third commonest cause of death in developed countries. It is less common below the age of 40 years and is more common in males.

In developed countries the incidence of cerebrovascular disease is decreasing in the age range 30-60 years as hypertension is recognized and treated.

Stroke is a vascular lesion causing focal neurological deficits. Which is rapid in onset and lasting for more than twenty-four hours. The basic pathophysiology of cerebrovascular disease can be hypoxia,

ischemia, infarction, intracranial hemorrhage or hypertensive cerebrovascular disease. It may also be caused by tumors, subdural haematomas, abscess, demyelination, atrophy, gliosis etc. Intracerebral haematoma may be traumatic or as result of spontaneous bleeding due to hypertension, atheroma, amyloid angiopathy, aneurysm, angioma, blood disorder, anti-coagulants and tumor.

The risk factors and predisposing causes in cerebrovascular disease are hypertension, diabetes mellitus, family history, obesity, cigarette smoking, oral contraceptives, hyperlipidaemia, alcohol, age, mitral stenosis, extracranial or intracranial atheroma, hypotension, arteriovenous malformations, Berry aneurysms, polycythema, bleeding disorders etc. Our aim is to identify the percentage of normal CT in cerebrovascular disease done after 24 hours of stroke.

PATIENTS AND METHODS

This study was conducted in the Department of Radiology, PGMI, Lady Reading Hospital Peshawar over a period of six months during the year 2001-2002 from 01.12.2001 to 31.05.2002

A total of 368 patients of age range 3-100 years, were studied by unenhanced and intravenous contrast enhanced CT technique where required, with fourth generation CT scanner. Axial sections were acquired through brain from base to vertex at 10mm distance. All were clinically established cases of cerebrovascular disease.

RESULTS

In a total of 368 cases of cerebrovascular disease 48.64% were males and 51.36% were females. In this study findings were as under:

Infarction 46.19%, hemorrhage 27.44%, atrophy 3.26%, cerebral gliosis 1.08%, cerebral glioma 1.08%, cerebritis 0.54%, lymphoma 0.54%, cerebral abscess 0.27% an there was normal CT study in 19.56%. (Table)

SPECTRUM OF FINDINGS IN CT BRAIN IN CEREBROVASCULAR DISEASE AT P.G.M.I, LADY READING HOSPITAL PESHAWAR

Types of Lesion	No. of Patients
Infarction	170
Hemorrhage	101
Normal CT findings	72
Brain atrophy	12
Cerebral gliosis	4
Cerebral glioma	4
Cerebritis	2
Lymphoma	2
Cerebral abscess	1
Total	368

TABLE

DISCUSSION

Study was done after 24 hours of onset of disease and out of 368 cases 19.56% had normal findings. This was in accordance with a study in Poland by Abdallah-M² published in 2000, which stated that in old CT scanner CT was negative during first 48 hours of onset of neurological symptoms but modern CT is still the first choice in the differential diagnosis of acute stroke. Positive findings could be demonstrated in first 3 hours of onset of symptoms.

In a study of Kochar¹ in India in June 2000, CT sensitivity, specificity, positive predictive value negative predictive value of diagnostic gain were calculated for acute hemorrhage and thrombotic strokes by doing CT immediately and 48 hours after admission if required, in which in 22.1% cases useful results were not there.

In another study by Urbach-H⁴ during 2000, comparing detectability and detection rate of acute ischemic cerebral hemisphere infarcts on CT and diffusion weighted MRI, concluded that ischemic infarcts were visible on 15 and not seen on 12 CT studies (55% sensitivity, 100% specificity).

A study conducted in USA by Krishnamoorthy⁵ showed that in the acute setting CT and conventional MRI provided less information than diffusion weighted imaging.

In case of infarction area of diminished density, accompanied by mild mass effect may be seen as early as 6 hours after onset or symptoms^{6,7}. Unless accompanied by hemorrhage in the first 24 hours, CT will detect only 50% of infarcts, this depends on the quality of CT images. The results of our study are the same as those of the others.

CONCLUSION

In this study it is concluded that CT findings can be normal in Cerebrovascular disease. Such cases may be scanned by conventional MRI and diffusion weighted MRI.

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