

## Evaluation of carotid arteries using color Doppler ultrasound in the diagnosis of Ischemic Stroke

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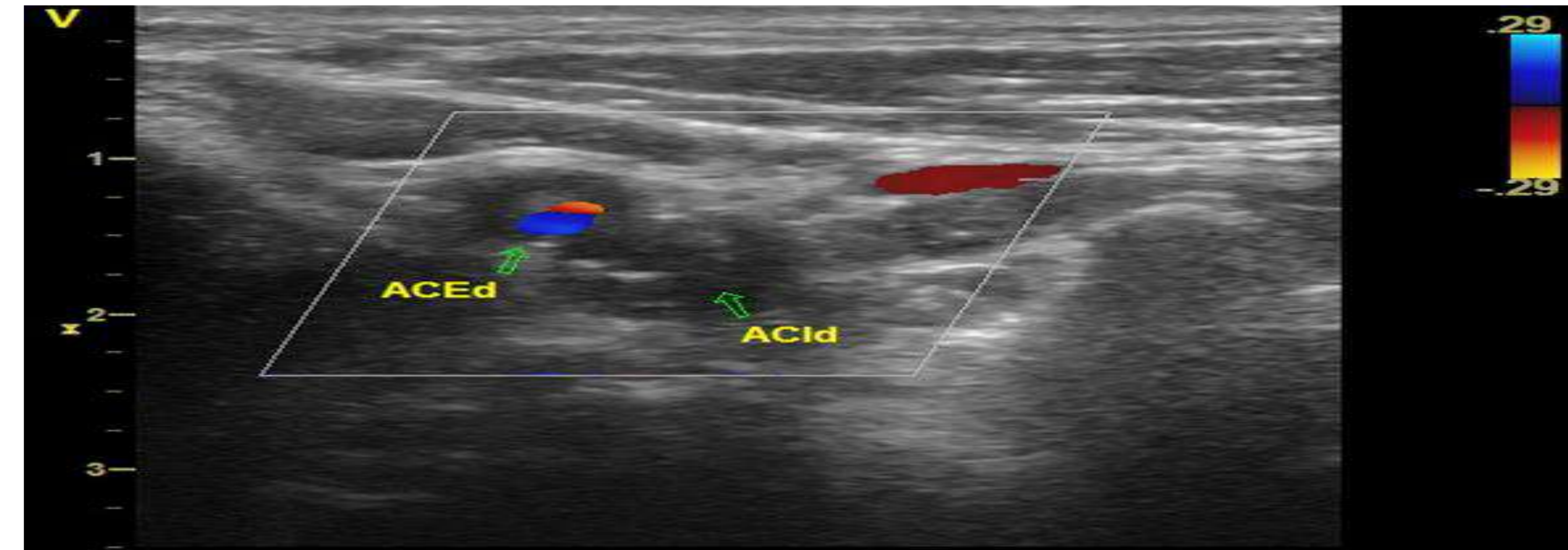
**Introduction** The study is elaborated to evaluate carotid arteries using color Doppler ultrasound in the diagnosis of ischemic stroke. It is one of the leading causes of death in the world and are a common cause of handicap for adults.

**Keywords** Stroke, Ultrasound Doppler, carotid artery, atheromatous plaque, stenosis.

**Purpose** The aim of the study is to demonstrate the association of carotid artery stenoses with most cases of ischemic stroke

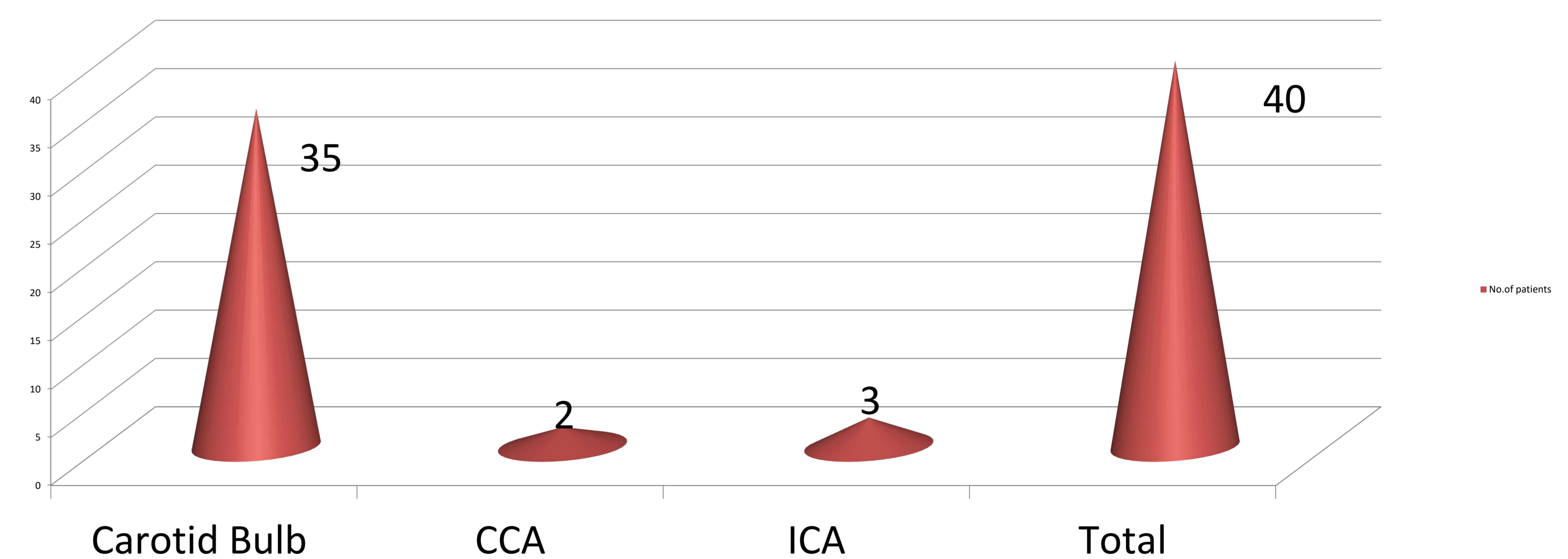
**Material and methods** The study was performed on 40 patients, examined at the General Electric Vivid S6 ultrasound, with a linear array transducer of 7 MHz. Data obtained refer to: the appearance and characteristics of the atheromatous plaque ( hypoechoic, hyperechoic, calcified) (*Image no 1*), the gradation of stenosis based on the maximum systolic velocity of the internal carotid artery (PSV), the PSV ratios between the internal carotid artery and the common carotid artery.

*Image no 1* Occlusion of right internal carotid artery of hypoechoic plaque in a 68-year-old male with right middle cerebral artery territory infarct



**Results** The highest incidence of stroke was found in the male population. Out of 40 patients, 28 are men and 12 women, in the age group 59-70 years. The carotid bulb was the common site of atheroma plaque for 35 of 40 patients. (see Fig. 1)

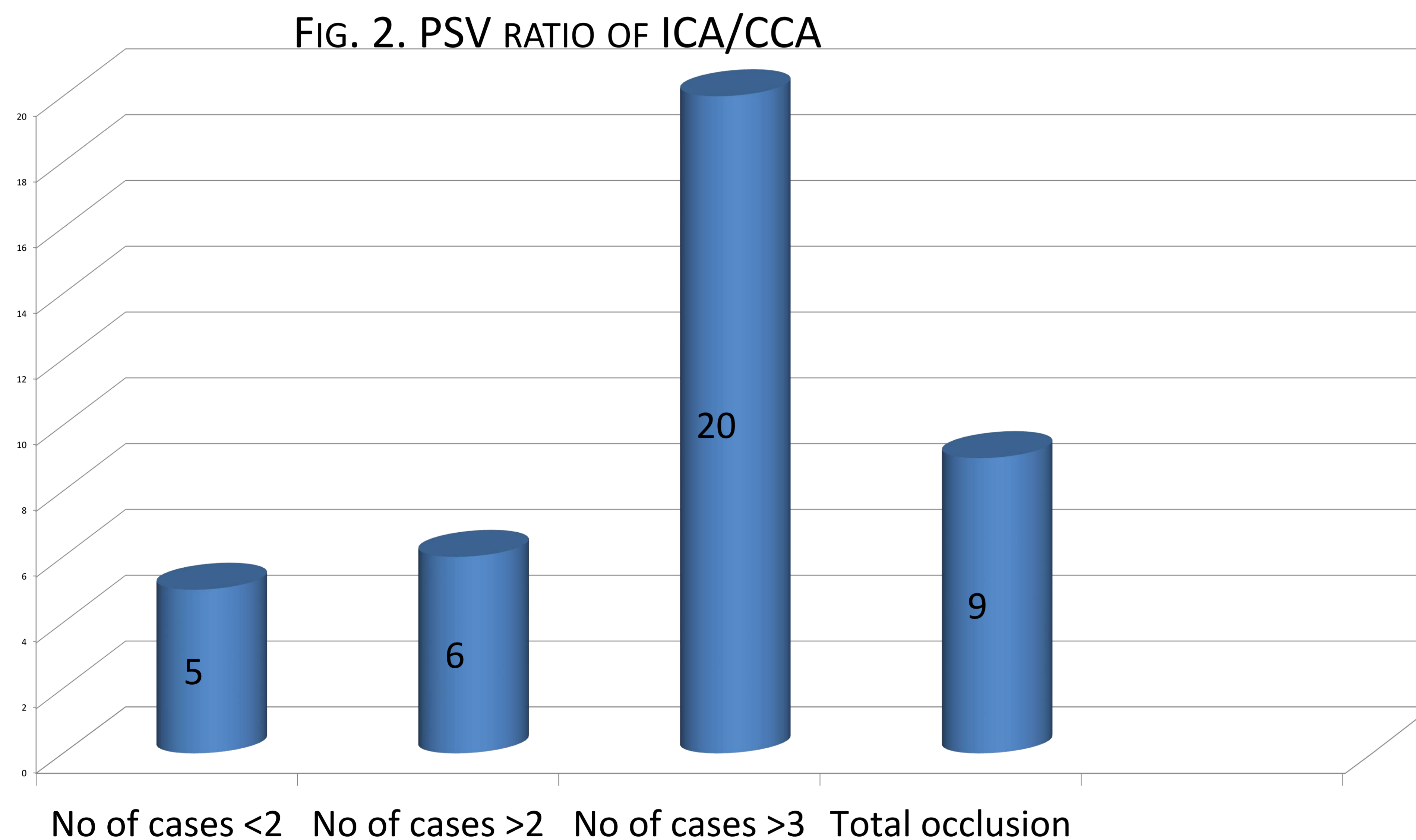
FIG. 1. SITE DISTRIBUTION OF ATHEROMATOUS PLAQUE (CCA: COMMON CAROTID ARTERY; ICA: INTERNAL CARITID ARTERY)





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**Results** Also, based on PSV of ACI, 20 patients had significant stenoses (greater than 60%), 11 - stenoses less than 60%, and 9 patients had occlusion of the internal carotid artery. The PSV ACI / ACC ratio was also a useful informative indicator, according to which the result higher than 3 indicates significant stenosis (> 60%). (see Fig. 2)



**Results** CT brain findings showed normal findings in cases, whereas MCA infarct ( 18 cases ) were the most common pathological involvement ( Table 1 ).

Table 1. CT brain findings in stroke patients (CT- computed tomography, MCA – middle cerebral artery, ACA – anterior cerebral artery )

Type of infarct	No of cases	%
MCA infarct	18	45%
Lacunar infarct	13	32.5%
ACA infarct	2	5%
Normal study	7	17.5%

**Conclusions** This study highlights the importance of Doppler sonography in patients with ischemic stroke with the association of the percentage of extracranial carotid artery stenosis.

Color Doppler examination is a safe, informative, economical method that requires little time to confirm the cause of cerebrovascular insufficiency in extracranial carotid artery system with subsequent guidance of treatment modalities.