

## **B.4. Diagnosis and Management of Ischemic Cerebrovascular Disease**

Knowledge of the symptoms and signs of occlusive cerebrovascular disease is necessary for effective diagnosis and management of these patients. Symptoms are often transient, may be subtle, and can be unappreciated by both patient and physician. As most occlusive cerebrovascular is secondary to atherosclerosis of the internal carotid artery, the following brief review will focus on patients with this particular problem.

### **a. Transient Ischemic Attack**

Transient ischemic attack (TIA), a transient neurological deficit secondary to dysfunction of a part of the cerebral hemisphere because of a lack of blood flow, is the most common symptom in patients with atherosclerotic carotid artery disease. TIA has been traditionally defined as lasting less than 24 hours.

Vague symptoms such as dizziness, confusion and blurred vision are not TIAs. Unilateral weakness, clumsiness and numbness are the most common symptoms but dysphasia and dysarthria may also occur. The diagnosis is based on a careful history, as most patients will not have discernible neurological deficits when being examined. Many conditions, including seizures, intracranial tumors and hematomas, cardiac dysrhythmias, hypoglycemia and migraine may produce symptoms similar to TIAs. These other etiologies must be considered in a patient suspected of having TIAs.

### **b. Amaurosis Fugax**

Amaurosis fugax (AF), a transient loss of vision involving one eye, is the second most common presenting symptom in patients with atherosclerotic carotid artery disease. This can be confused with a transient visual problem involving both eyes in one visual field and careful questioning will be necessary to differentiate between the two. Many patients will not have tested each eye separately during an episode of visual loss, in which case differentiation may be impossible.

### **c. Evaluation of Suspected atherosclerotic Carotid Artery Disease**

#### **i. General**

As indicated above, patients with suspected carotid artery stenosis need a careful history to identify symptoms suggestive of AF or TIA and to assess their risk factors for generalized atherosclerotic vascular disease. Such risk factors include advanced age, smoking, diabetes, hypertension, hyperlipidemia, peripheral vascular occlusive disease, coronary artery disease and a positive family history of stroke or myocardial infarction. General physical and neurological examinations looking for evidence of peripheral and cerebrovascular arterial stenosis or neurological deficit is done following a careful medical history. The presence of a cervical bruit on auscultation of the neck may indicate carotid artery stenosis producing turbulent blood flow. This is the most common physical finding in patients with clinically significant atherosclerotic carotid artery disease but its absence does not rule out the diagnosis. Diminished peripheral pulses may indicate generalized atherosclerotic vascular disease.

#### **ii. Fundoscopic Examination**

Cholesterol emboli may occasionally be seen in retinal vessels of patients with atherosclerotic carotid artery disease with or without AF.

### **iii. Laboratory Evaluation**

Patients with TIAs should have a study such as a cranial CT or MRI scan to rule out intracranial lesions. Imaging of the carotid arterial system with carotid duplex ultrasonography, magnetic resonance angiography, CT angiography or digital subtraction angiography should also be done if atherosclerotic carotid artery disease is suspected from the history and/or examination. Echocardiography may also be indicated to look for a cardiac source of embolism. Screening laboratory evaluation to look for evidence of coagulopathy (PT, PTT, INR), vasculitis (ESR) or hyperlipidemia should also be considered.

### **d. Indications for Carotid Endarterectomy**

Patients with symptomatic atherosclerotic carotid artery disease producing a 70% or greater diameter stenosis of the internal carotid artery disease benefit from surgery if the perioperative morbidity and mortality is less than 7%. Patients with asymptomatic disease and greater than 60% stenosis benefit from surgery if perioperative complications are less than 3%. If in doubt as to the potential benefit of carotid endarterectomy patients should be referred to skilled cerebrovascular surgeon for evaluation.