Prevalence of Significant Carotid Artery Stenosis in Patients with Significant Atherosclerotic Peripheral Arterial Disease

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Degree in **Cardiology**

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List of Abbreviations

Abb.	Full term
A-II	Angiotensin II
	Abdominal Aortic Aneurysm
ABI	Ankle Brachial Index
ACAS	Asymptomatic Carotid Artery Stenosis
ADA	American Diabetes Association
CABG	Coronary artery bypass grafting
CAD	Coronary artery disease
CAS	Carotid Artery Stenosis
CCA	Common Carotid Artery
CEA	Carotid End Arterectomy
COD	Carotid Occlusive Disease
CRP	C-Reactive Protein
CT	Computed Tomography
CTA	Computed Tomography angiography
CUS	Carotid Ultra Sound
DM	Diabetes Mellitus
DUS	Duplex Ultra Sound
EDV	End Diastolic Velocity
EDRF	Endothelium-derived relaxing factor
ESC	European Society of Cardiology
FH	Family History
HDL	High density lipoprotein

List of Abbreviations (Cont...)

Abb.	Full term
HTN	Hypertension
	Internal Carotid Artery
	Ischemic Heart Disease
IMT	Intima Media Thickness
LDL	Low density lipoprotein
MI	Myocardial Infarction
MRA	Magnetic resonance angiography
MRI	Magnetic Resonance Imaging
PA	Peripheral Angiography
PAD	Peripheral Arterial Disease
PSV	Peak Systolic Velocity
PVD	Peripheral Vascular Disease
S.Cr	Serum Creatinine
SD	Standard Deviation
SMCS	smooth muscle cells
TGs	Triglycerides
TIA	Transient Ischemic Attack

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Introduction

Peripheral artery disease (PAD) is a progressive disease occurring as a result of atherosclerosis in the arterial system.

Peripheral arterial disease (PAD) comprises those entities which result in obstruction to blood flow in the arteries, exclusive of the coronary.

The definition of PAD technically includes problems within the carotid circulation, the upper extremity arteries, and the mesenteric and renal circulation⁽¹⁾, we will focus on chronic arterial occlusive disease in the arteries to the legs.

Atherosclerosis in the peripheral arteries is a chronic, slowly developing condition causing narrowing of the arteries. Depending on the degree of narrowing at each vascular site, a range of severity of symptoms may occur, while many patients will remain asymptomatic throughout their life. (1)

Occasionally acute events occur, often associated with thrombosis and/or embolism and/or occlusion of a major artery.

The diagnosis of PAD is difficult as most patients remain asymptomatic for many years. Symptoms do not present until there is at least 50% narrowing of an artery.

Since atherosclerosis is a systemic disease, physicians must appreciate the importance of detecting atherosclerosis in other vascular beds in order to establish the correct treatment to prevent organ damage.

As shown recently by the Reduction of Atherothrombosis for Continued Health (REACH) Registry, a substantial percentage of patients with chronic CAD have associated cerebrovascular disease, lower extremity artery disease (LEAD), or both. (2)

Given the common aetiology of peripheral atherosclerosis occurring at different vascular sites, the presence of disease at one site increases the frequency of symptomatic and asymptomatic disease at another. Peripheral arterial disease (PAD) and carotid occlusive disease (COD) are both known to be specific manifestations of atherosclerosis. Because they both have a common cause, it is reasonable to hypothesize that they should correlate with each other to a certain extent, and previous studies have shown that there is a correlation between the prevalence of PAD and COD. (3)

Carotid occlusive disease is usually caused by an atherosclerotic process and is one of the major causes of stroke and transient ischemic attack (TIA) ⁽⁴⁾. Ischaemic stroke has a major public health impact as the first cause of long-term disability and the third leading cause of death.

Large artery atherosclerosis, and specifically internal carotid artery stenosis, accounts for ~20% of all ischaemic strokes. (5) In the vast majority of cases, carotid artery stenosis is caused by atherosclerosis.

Carotid stenosis is usually diagnosed by color flow duplex ultrasound scan of the carotid arteries. Early detection of carotid occlusive disease will help in controlling cerebrovascular events as For each 10% increase in the degree of carotid stenosis, the risk of having a cerebrovascular event increased by 26%. (6)

The association between manifestations atherosclerotic disease in various arterial beds has been evaluated in numerous studies employing several types study design. The rationale for expecting a correlation among different arterial beds is the systemic of atherosclerosis. Specifically, nature peripheral arterial disease (PAD) and carotid occlusive disease (COD) have been evaluated to determine how they correlate with each other and with other manifestations of atherosclerosis. (7)

Carotid duplex ultrasonography (DUS) is well tolerated by all patients, and so it can be a useful diagnostic tool for assessing the stages of atherosclerosis.

Aim of the Work

The aim of the study is to detect the prevalence of significant carotid artery stenosis in patients with significant atherosclerotic peripheral arterial disease underwent peripheral angiography, using carotid duplex ultrasonography.