CHAPTER 5

SCOPE FOR FUTURE WORK

The steady increase in the number of patients with myocardial infarction or cerebral infarction, both of which are considered to be the main cause of atherosclerosis is becoming a serious problem. Atherosclerosis remolds the arterial intima-media complex increasing the thickness of this structure. Cross-sectional studies in humans have found that wall thickness and dilatation are prominent structural changes that occur within large elastic arteries during aging (Lakatta 1993). Post mortem studies indicate that aortic wall thickening with aging consists mainly of intimal thickening even in populations with low incidence of atherosclerosis (Virmani 1991).

Non-invasive measurements made within the context of several epidemiological studies indicate that the carotid IMT increases nearly three fold between 20 and 90 years of age. The mean IMT of the CCA is shown to predict atherosclerotic progression and regression. The increase in IM thickness represents early stage of atherosclerosis. Excessive IM thickening at a given age predicts future clinical cardiovascular disease. Changes in thickness are observed well in advance of sclerotic plaque appearance, enabling early diagnosis of atherosclerosis. Ultrasonic image can provide unique information on the composition of atherosclerotic carotid plaques, in particular, the relative content of lipid, fibrous tissues and calcific deposits (Reilly 1983). The study of carotid plaque morphology on ultrasonography has relied upon visual characterization based on subjective and qualitative evaluation of B-mode images (Manolio 2004). Therefore the work can be
Medina et al (2003) have discussed this IMT and have associated the increased IMT and have associated this with stroke. The degree of risk varies with degree of vascular thickening. Therefore a new work can be initiated to find the intima media thickness of the carotid artery in subjects with different risk indices in different age groups. It must be noted that IM thickening occurs with aging even in the absence of atherosclerosis. Though this is independent of atherosclerosis, it predisposes for the later development of the disease.

To measure IMT most research groups used manual tracing method to delineate the boundaries of an intima-media complex (Baldassarre 1994). The manual methods are not only time consuming but also not reproducible. In addition, the tracing results vary according to the training, experiences and subjective judgment of the physicians. Hence an automatic system is preferred. Few works have been done in identifying intimal boundary from ultrasound images (Dwyer 1998). But the drawback is that medial layer boundary is not easily obtainable from ultrasound images. Also the accuracy of obtaining the lumen intima boundary is comparatively on the lower side. More accuracy is needed in determining the intima media boundary lines as the distance measures roughly about 0.3mm to 0.6mm only.

The lumen intima interface and the media-adventitia interface of the near and far walls of the CCA must be considered for measurement. When this is done for different subjects with different age groups and different levels of plaque deposits, then they can be classified into having no, mild, moderate or severe atherosclerosis.
Vascular aging is characterized not only by age-associated increase in large vessel lumen and stiffness of vessel wall but also by wall thickening and endothelial dysfunction. This work considers only the first two parameters which is sufficient for vascular aging. Only healthy subjects are taken for study. If the subject tested must know the severity of the problem, adding the IMT as the third parameter in determining the age can do it. Not only that, but, the severity of the unsuccessful vascular aging can also be informed clearly to the subjects tested.