Association of Superficial Femoral Artery (SFA) and Carotid Artery Intima-Media Thicknesses (IMTs): An Ultrasound Assessment

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INTRODUCTION

Peripheral Arterial Disease (PAD) is mainly caused by atherosclerotic changes. PAD is the narrowing of lower extremities arteries due to plaques build up. This accumulation can restrict blood supply to leg muscles, which results in serious conditions if it is untreated. The observations have indicated that Femoral arteries get affected in 80-90% of symptomatic peripheral arterial disease patients[1].

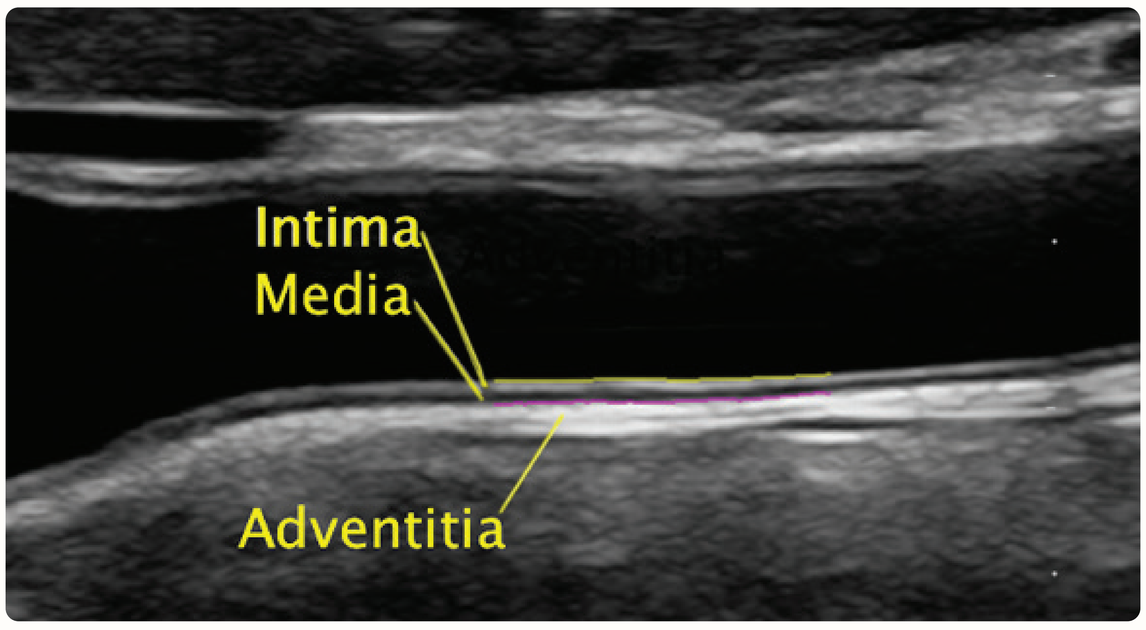
A previous study indicated that the femoral arteries show atherosclerotic changes earlier than the carotid arteries[2]. One study revealed that with normal ABPI, significant atherosclerotic changes may be present in SFA IMT[3]. In atherosclerosis monitoring, while Carotid IMT remains a benchmark, the femoral IMT has garnered attention as a possibly superior marker for generalized atherosclerosis.

OBJECTIVES

Carotid and Superficial Femoral Artery Intima-Media Thicknesses have emerged as valuable non-invasive measures to assess subclinical atherosclerosis. This study aims to investigate Intima-Media Thickness (IMT) of the Superficial Femoral Artery (SFA) as a surrogate marker for Peripheral Arterial Disease (PAD) as SFA is mostly affected by (PAD).

MATERIAL & METHODS

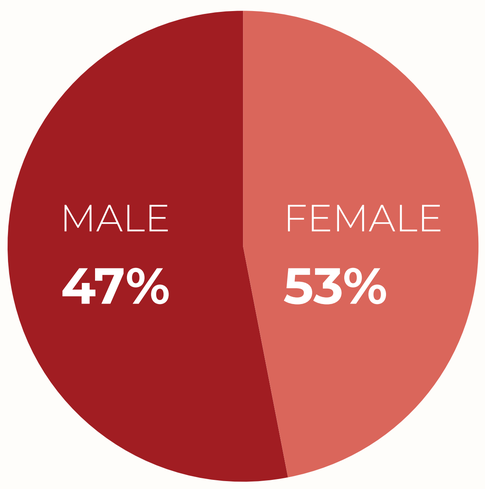
A pilot observational study was conducted on patients with clinical symptoms of peripheral arterial disease, using an Ultrasound assessment of Carotid artery and SFA Intima-Media Thicknesses. The research involved scanning of the carotid artery and SFA Intima-Media Thicknesses in 18 patients and 12 control individuals with no known arterial disease, where the Peak Systolic Velocity, IMT, diameters of both arteries, and End Diastolic Velocity (EDV) of carotid artery were recorded. Age, gender, risk factors, and Body Mass Index (BMI) were collected as demographic data.



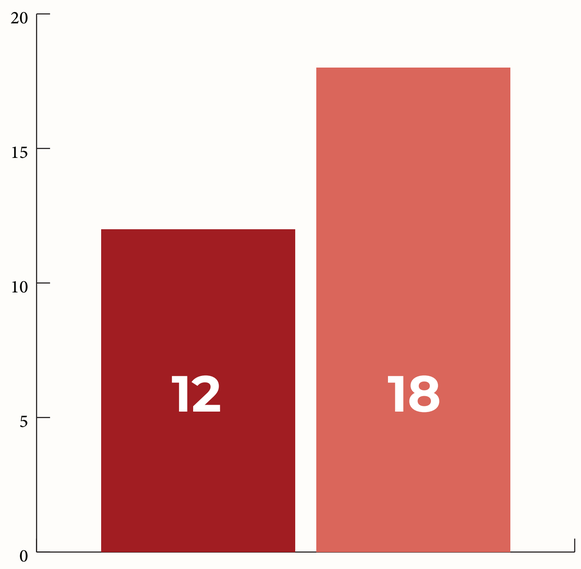
RESULTS

Patients undergoing medicinal treatment, hypertension, and those who led sedentary lifestyles demonstrated a greater influence on SFA IMT. The means of Carotid artery IMT and the SFA IMT were 0.54 ± 0.28 mm and 0.74 ± 0.35 mm respectively, indicating a statistically significant difference (P<0.001). This suggests that SFA is more affected by PAD than the carotid artery. This would make SFA IMT a more sensitive surrogate marker of the presence of arterial disease.

GENDER



DISTRIBUTION OF PARTICIPANTS



DISCUSSION

The findings of the study reveal a noticeable difference in SFA IMT between control and hypertensive patients, with mean values of 0.63 ± 0.21 mm and 1.07 ± 0.51 mm, respectively with(P=0.003). This finding is in agreement with previous study which showed that hypertension contributes significantly to femoral artery IMT change[4]. This research found mean values of 0.74 mm ± 0.35 and 0.54 mm ± 0.28 for SFA IMT and Carotid IMT respectively, in individuals who exhibit sedentary lifestyle with p<0.001. This finding suggests that SFA IMT might be more affected by physical inactivity than CIMT.

CONCLUSION

The data from this study suggests that SFA IMT is a more sensitive surrogate marker of the presence of arterial disease than traditional carotid IMT measurement. Further investigation with a larger sample size is recommended to corroborate this finding. The results of this study could help to enhance the current diagnostic method for PAD.

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Reference