INTRODUCTION

During last decade high-resolution carotid ultrasound has been used in number of studies. To date previous investigations have shown cross-sectional associations between intima-media thickness (IMT) of carotid arteries and cardiovascular risk factors [1,2], the prevalence of cardiovascular disease [3-5] and prediction of adverse prognosis in patients with CVD [6-8]. Measurement of IMT have also been used as a surrogate end point in studies determining the success of lipid-lowering (especially, statin) interventions [9,10], antihypertensive therapy [11], or both [12].

OBJECTIVES

To evaluate the usefulness of noninvasive assessment of carotid artery intima-media thickness (IMT) in prediction of severity of coronary atherosclerosis in patients with a coronary artery disease.

MATERIAL AND METHODS

B-mode ultrasound of carotid arteries was performed on commercially available equipment with 7.5 MHz probe in 140 patients (average age 53±7 yrs, 100M/40F). 81 out of 140 patients had a stable coronary artery disease.

Abstract:

It has been evaluated the usefulness of noninvasive assessment of carotid artery intima-media thickness in prediction of coronary atherosclerosis. B-mode ultrasound of carotid arteries was performed on commercially available equipment with 7.5 MHz probe in adult patients (average age 53±7 yrs. Intima-media thickness (IMT) less than 1.0 mm was considered as normal. IMT more or equal to 2.0 was considered as a sign of carotid plaque. Coronary angiography was performed within 3 months in all patients. Accordingly to the results of coronary angiography patients were divided into three groups: patients without evidence of coronary atherosclerosis, patients with one-vessel disease, and patients with multivessel disease. Conclusions: In carotid ultrasound study - technically simple, noninvasive method showed good correlation with the severity of coronary atherosclerosis, especially in patients with multivessel disease, having worse long-term prognosis. Key words: intima-media index(IMT), carotid ultrasonography, coronary angiography.
results

Accordingly to the results of coronary angiography patients were divided into three groups. First group comprises 23 patients (mean age 52±10 yrs) without evidence of coronary atherosclerosis. Twenty patients with single-vessel disease consisted second group (mean age 53.6±7.6 yrs). Left coronary artery involvement was observed in 9 patients, RCA in two and circumflex artery in one patient. Remaining 95 patients (mean age 54.7±6.2 yrs) had multi-vessel disease (third group). 75 of them had at least one occlusive lesion.

We failed to detect any signs of carotid atherosclerosis in the vast majority of patients without overt coronary lesions on angiography (table 1): 84.6% of them had normal (less than 1.0 mm) carotid IMT. The remaining 15.4% of patients of this group showed only moderate thickness (1.0 mm - 2.0 mm), and no one had signs of carotid plaque (IMT more than 2.0 mm).

Interestingly, that single-vessel disease already was associated with significant increase of IMT. Altogether, signs of carotid atherosclerosis were observed in 55.4% of patients (38.3% with IMT 1.0-2.0 mm, and 29.2% with IMT more than 2.0 mm), albeit 54.6% of patients had normal IMT.

65 of 95 of patients having multi-vessel disease have had signs of carotid atherosclerosis on ultrasound examination. Moreover, in 72.5% of them carotid ultrasound detected severe increase of IMT (more than or equal to 2.0 mm). Normal carotid IMT was observed in 25.6% of patients only. The Spearman correlation between IMT and multi-vessel CAD was 0.76.

Discussion

High-resolution B-mode ultrasound is a noninvasive and inexpensive method for the visualization of IMT in superficial arteries. It has been previously reported that transcutaneous B-mode ultrasound provides a reliable approach for in vivo measurements of the CCA [13]. At present data from large studies have demonstrated that carotid IMT measurement correlates with the presence of coronary atherosclerosis and represents an independent risk factor for CHD events - the higher the IMT, the greater the risk of death, MI or stroke.

Conclusions

In our study carotid ultrasound-technically simple, noninvasive method showed good correlation with the severity of coronary atherosclerosis, especially in patients with multi-vessel disease, having worse long-term prognosis. However, standardized protocol for IMT measurements is needed before it can be widely implemented in the clinical practice.

Bibliography

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