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Original contribution

## Evaluation of a New Carotid Intima-Media Thickness Measurement by B-Mode Ultrasonography Using an Innovative Measurement Software, Intimascope

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Carotid intima-media thickness (IMT), an indicator of atherosclerosis and coronary heart disease (CHD) is usually evaluated by eye measurement under B-scope carotid artery ultrasonography. However, the axial resolution of this system is 0.1 mm, which causes difficulties in respect to accuracy and reproducibility. We evaluated a newly developed B-scope carotid artery ultrasonography programmed by an innovative measurement software, Intimascope (Media Cross Co. Ltd., Tokyo, Japan), which measures IMT with 10 times higher axial resolution at an estimated scale of 0.01 mm. Intraobserver or interobserver coefficient of variation (CV) of the computer-based average IMT (aver-IMT) value and 3-point IMT value were much smaller than the corresponding value by conventional eye-measurement method (3-point value). We measured IMT of 427 asymptomatic subjects undergoing medical checkups (243 men and 184 women, 23 to 73 years of age). Although the mean values of aver-IMT and 3-point IMT of 427 subjects were comparable with that of the eye measurement method, the aver-IMT showed the smallest SD (standard deviation) and CV values. In both men and women, multivariate regression analysis revealed significant contributions of age and LDL-C to the aver-IMT value. Univariate regression analysis revealed that the aver-IMT value of total subjects showed the highest correlation coefficient values with most risk factors and risk assessment score, Framingham Risk Assessment, or Prospective Cardiovascular Munster study (PROCAM) Risk Score. These results may suggest superiority of computer-based aver-IMT over 3-point IMT by either computer-based or eye measurement method. Carotid aver-IMT measurement using the new Intimascope software may provide a more precise and reproducible index of atherosclerosis than does conventional IMT measurement.

**Key Words:** IMT; carotid; software

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