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Noninvasive Detection of Coronary Atherosclerosis by Multifunction Cardiogram

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Background

MCG is a new device with non-invasive, resting ECG analysis and developled to detect relevant CAD and its performance is still controversial.

Method

84 patients suspected CAD who are scheduled to have CTA(CCTA (Age66±10.9, Male:55, Female:29) and compare Ca-score, Segment Stenosis Score(SSS), Segment Involvement Score(SIS)(*) with MCG. Excluded, severe calcification in CCTA, Inappropriate low quality image for analysis, Impaired renal function (eGFR<30ml/min/1.73^2) and Contract allergy.

Result

① MCG scores in patients with or without severe stenosis are significantly different.(without stenosis:0.5, with stenosis:3.5, p<0.001)

②For ROC curve detecting severe stenosis, AUC＝0.79, Sensitivity:66.7%, Specificity:86.4%, PPV: 57.1% and NPV:90.5%.(Best cut off point is 3.5, p<0.0001)

③SSS and MCG, SIS and MCG are correlated.
(SSS：r=0.36、p=0.001、SIS：0.31、p=0.004)

Conclusion

MCG score is correlated to severe stenosis and likely indicates the presence of severe stenosis.

The study demonstrated MCG might provide a valuable contribution to the diagnosis of CAD in a non-invasive manner.

(*)Segment Stenosis Score (SSS): Scoring the severity of the plaque for 16 parts of coronary artery with the severity 0(no plaque), 1(mild), 2(moderate), or 3(severe). (n/48)
Segment Involvement Score (SIS): Scoring the existence of plaque for 16 parts of coronary artery irrespective of the severity of the plaque. (n/16)