If CAD is caught early by MCG (Multi-function Cardiography) test, ACS can be highly preventable in Myanmar by Doing MCG Test.

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Japan Myanmar Medical Help Group (JMMHG) Activity
Disclosure: There are no financial or other relationships that might lead to a conflict of interest.

Background

Among the deaths by non-communicable diseases, Coronary artery disease (CAD) is the highest cause of death in Myanmar. Because the number of heart centers with Cath Lab is limited in Myanmar, accurate diagnosis of CAD patient is more important to start appropriate (PCI/Optimal Medical Therapy) treatment.

Purpose

MCG is the non-invasive new technology developed to detect IHD by analyzing the resting ECG. This study is to evaluate whether MCG can be feasible for early detection of CAD in patients with or without chest pain by comparing with CAG to start appropriate treatment in order to prevent ACS.

Method

Total 20 patients (Average age59 ± 7.1, Male:17, Female:3) with MCG (≥ 4 score) scheduled to do CAG were selected. Coronary Stenosis of ≥75% (75%〜100% of stenosis) in a single or multiple vessels is defined as severe CAD necessary to start an appropriate treatment.

MCG score ≥ 6, 5, 4 were used as cut-off respectively to indicate presence of coronary stenosis (≥ 75%).
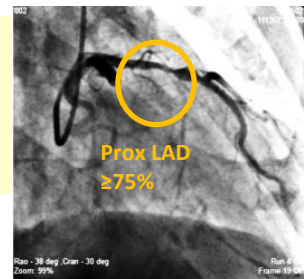
Result

MCG scores in patients with or without severe CAD are significantly different. (with CAD: 6.5, without CAD:4.9, p<0.001) . Best cut off value is MCG score ≥ 6, and is identified sensitivity 80.0%, specificity 90.0%, PPV 88.9%, NPV81.8%, and accuracy 85.0% (p<0.01). Score 6.0 is categorized as high in MCG session analysis.
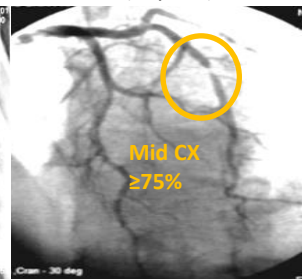
<Table 1> Results of CAG findings and MCG analysis

	CAD(+)	CAD(-)
MCG(+)	8	1
MCG(-)	2	9

(P<0.01)

Best cut off value: 6.0
Sensitivity 80.0% ,
Specificity 90.0%,
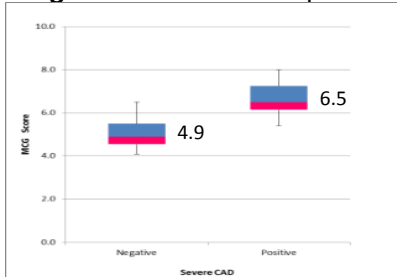PPV 88.9%,
NPV81.8%,
Accuracy 85.0%.

<Figure1> MCG score in patients with or without CAD

MCG scores in patients with or without server CAD are significantly different.

(P<0.001)

4.9

6.5

<Figure2-①>
(72yrs,M)

Prox LAD
≥75%

(CAG)

MCG	Score
test1	7
test2	5.5
test3	6
test4	7
test5	7
Average	**6.5**

(MCG)

<Figure2-②>
(67yrs, F)

Mid CX
≥75%

(CAG)

MCG	Score
test1	5.5
test2	5.5
test3	8
test4	5.5
test5	6
Average	**6.1**

(MCG)

Conclusion

MCG showed high sensitivity and specificity, and high score of MCG likely indicates the presence of severe CAD. MCG can be used for early detection and follow-up of CAD, same as diagnosed by CAG in order to start the appropriate necessary (PCI/Optimal Medical Therapy) treatment before the occurrence of ACS.

Discussion

There were 2 patients with MCG score < 6 (false negative) noted severe CAD with collateral flow in CAG. There was 1 patient with MCG score ≥ 6 (false positive) noted normal CAD in CAG, it may be due to vasospasm. The patients without severe CAD group have also <50% or<75% stenosis expect one normal patient. It suggests that MCG score may indicate an early stage of arteriosclerosis in that patient.
The usefulness of MCG at early stage of arteriosclerosis will be evaluated in the future study.
JMMHG aims to reduce the incidence rate of ACS in urban and rural population. Collaboration and cooperation of all Japan/Myanmar stakeholders (If possible), partners like academia, civil societies and community/companies are obviously necessary for the successful implementation for early diagnosis of CAD by MCG test because total 15 Cath Labs and not more than 50 interventional cardiologists can not cover the whole area of Myanmar to detect the early diagnosis of CAD to be able to start the appropriate necessary (PCI/Optimal Medical Therapy) treatment before the occurrence of the ACS in Myanmar.