

論文の内容の要旨

論文題目 Relationship between Mitral Leaflet Size and Coaptation-zone area and their Associated Factors in Patients with Normal Left Ventricular Size and Systolic Function: Real-time 3D Echocardiographic Analysis
(僧帽弁の弁葉面積と接合面積に影響する臨床因子とは-リアルタイム3次元心エコー図による解析)

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Functional mitral regurgitation (FMR) is a complication in patients with ischemic and dilated cardiomyopathy, and is associated with poor clinical outcome. Recently, enlargement of the mitral valve (MV) has gained attention as a compensatory mechanism for FMR. I aimed to elucidate the clinical factors that are associated with reduced MV leaflet area and coaptation-zone area using real-time 3D echocardiography (RT3DE).

This study had two steps. The first step was to find which clinical factors were associated with MV in 175 patients with normal left ventricle (LV) size and ejection fraction. There was a significant relationship between the MV leaflet area and the coaptation-zone area ($r=0.481$, $p<0.001$). MV leaflet area was strongly and positively associated with body surface area (BSA) ($r=0.907$, $p<0.001$). MV leaflet area/BSA was independently associated with diastolic blood pressure ($p<0.001$) and LV end-diastolic volume (LVEDV) index ($p<0.001$). Both MV coaptation-zone area/BSA and MV coaptation-zone area/MV leaflet area were positively and independently associated with LVEDV index ($p=0.001$, $p=0.003$). MV coaptation-zone area/MV leaflet area was negatively and independently associated with coronary artery disease (CAD) ($p=0.034$). The second step was to determine if MV leaflet and coaptation-zone areas were associated with atherosclerosis assessed by cardio-ankle vascular index (CAVI) in 66 patients with normal LV size and ejection fraction. CAVI is a blood pressure-independent parameter of arterial stiffness. In multivariable analysis, mean CAVI was independently associated with MV leaflet area/BSA ($r=-0.440$, $p=0.015$) and with MV coaptation-zone area/BSA ($r=-0.611$, $p<0.001$), and with MV coaptation-zone area/MV leaflet area ($r=-0.530$, $p<0.001$).

In conclusion, the MV leaflet area might be intrinsically determined by body size. On the other hand, some clinical factors associated with atherosclerosis might also influence MV leaflet and coaptation-zone areas, which are associated with the generation of FMR.