To determine the clinical usefulness of the gated scintigraphy by second heart sound and electrocardiographic R wave in patients with atrial fibrillation, we examined the relationship between the ejection fraction (EF) calculated by this new method and the EF by the ordinary multigated scintigraphy. In patients with sinus rhythm, EF calculated by this new method was in close agreement with EF by multigated scintigraphy. On the other hand, in patients with atrial fibrillation, EF calculated by the new method correlated well with EF by the ordinary method in patients whose cycle length varies between narrow limits, but correlate poor in patients whose cycle length varies between wide limits. It was suggested that EF calculated by this new method was in particular useful in patients with atrial fibrillation whose cycle length varies between wide limits.

The sequential variability of LVEF and RVEF measured by equilibrium gated blood-pool scintigraphy (EQ) using fully-automated computer program has been studied in only a few reports and the comparison between this method and manual tracing of EF in S.V. of EF has not been reported. This study was undertaken to determine S.V. of EF and compare S.V. of EF by manual tracing with that by fully-automated technique. In 54 cases EQ was performed for 2 min twice with an interval of 30 sec. LVEF was computed by manual, fixed ROI (mf), automated, variable ROI (av) and automated, fixed ROI (af) and RVEF by mf. The correlation between two studies was good with r=0.97±0.08 for LVEF and 0.93 for RVEF, but the ∆EF between two studies was not slight with -0.1±3.2, -0.4±3.9, -0.4±4.3 and -0.4±3.9% (SD) for mf, av, af in LVEF and for RVEF(mf), respectively. The 95% confidence limit of ∆EF predicted by linear regression analysis was 7, 8, 8 and 9% for mf, av, af in LVEF and for RVEF(mf), respectively. The S.V. of automated technique was not influenced by observers was insignificantly different from S.V. of manual tracing, we concluded that the assessment of S.V., rather than of intra- or inter-observer variability, is necessary for determining an effect of an intervention on EF in individual cases.