several IDM's had very high values of % Δ LVD (> 45%). Our point was that left ventricular function did not appear to be depressed. Perhaps we should have said that it was normal or supernormal. In any event, we both agree that therapy with inotropic agents is not generally indicated.

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Reference

Ventricular Defibrillation

To the Editor:

The recent series of articles and editorials in the August 1979 Circulation regarding ventricular defibrillation are interesting and important. We wish, however to clarify a point made in the editorial by Drs. Tacker and Ewy.1 The authors state that defibrillator shocks may be associated with complications implying cardiac damage and cite our work2 as evidence to support this contention. We believe this to be a misinterpretation of our data. Our conclusions were very much the opposite.

We studied 44 patients after cardioversion or defibrillation. Our patients received electrocardiography, multiple cardiac enzyme determination and myocardial scintigraphy with technetium-99m pyrophosphate. The findings suggested that these tests including the myocardial scintigrams became positive only in patients who had suffered an acute transmural myocardial infarction during the time period surrounding the electric shocks. The discharge energy levels for the group were variable; however, 29 of these patients had direct epicardial defibrillation one or more times after discontinuation of cardiopulmonary bypass in the operating room. We found positive scintigrams only in patients who had other evidence of acute transmural myocardial infarction and not in patients even multiply defibrillated. While our data did not definitely exclude the possibility that some myocardial necrosis could have been caused in the patients with negative studies, such necrosis appears not detectable by currently available noninvasive methods. Other authors4,5 have reported myocardial necrosis from defibrillatory shocks and also so-called false-positive technetium pyrophosphate scintigrams after defibrillation, particularly in animals undergoing multiple high-energy shocks within a short time frame. We don't disagree that either myocardial necrosis or positive scintigrams can occur after multiple defibrillations; however, when used in the clinical setting in patients, neither false-positive scintigrams nor elevated cardiac enzymes were found. Indeed, in a separate series of 15 patients successfully resuscitated from out-of-hospital ventricular fibrillation and undergoing multiple high-energy countershocks, a localized positive myocardial scintigram of 2+ or more intensity was present in several patients who had an associated acute transmural myocardial infarction.6 Noncardiac uptake of radioisotope was seen in several patients in this group but was not felt to represent uptake of tracer within the myocardium but rather in the chest wall and hence was distinguishable from the infarction patients. We confirmed this using multiple precordial projections and in some cases other confirming tests, including thallium myocardial perfusion scintigraphy and radionuclide ventriculography.

In summary, positive myocardial scintigrams in multiply defibrillated patients using standard delivered energies did not occur unless there was associated acute transmural myocardial infarction. The meaning of nonlocalized radioisotope uptake or diffuse elevations in cardiac enzymes after multiple defibrillations is not known for certain but probably is nonspecific and related to musculoskeletal trauma. Cardiac damage may be caused by multiple high-dose defibrillation shocks as suggested by Drs. Tacker, Ewy and others; however, currently available clinical noninvasive parameters are too imprecise to draw this conclusion.

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References

Correction

Due to an error that occurred after page proofs were checked, several figures in this article were mislabeled. Pages on which these errors occurred are printed correctly on the next three pages.

The following pages should replace the original pages: page 1271 should replace page 497; page 1272 should replace page 500; page 1273 should replace page 501.

Summary of Errors
Figure 1 was printed as figure 15.
Figure 2 was printed as figure 16.
Figure 3 was printed as figure 13.
Figure 4 was printed as figure 14.
Figure 13 was printed as figure 3.
Figure 14 was printed as figure 4.
Figure 15 was printed as figure 1.
Figure 16 was printed as figure 2.
Figure 17 was printed as figure 19.
Figure 19 was printed as figure 17.
Ventricular defibrillation.
J A Werner

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