Treatment of Acute Myocardial Infarction by Primary Coronary Angioplasty or Intravenous Thrombolysis

To the Editor:

The importance of time to reperfusion among patients with acute myocardial infarction treated with thrombolytic therapy has been firmly established. Recent data suggest that time to reperfusion is a critical determinant of outcome with direct angioplasty as well.1 The primary reason balloon angioplasty has been associated with a better outcome than thrombolytic therapy in nearly all comparative randomized trials is likely that it can achieve reperfusion more rapidly in a greater number of patients.2,3 It was with considerable surprise, therefore, that I read in nearly all comparative randomized trials is likely that it can been associated with a better outcome than thrombolytic therapy. 3,5 angioplasty was associated with a significantly better clinical
plasty in the “real world,” and these studies found that primary
results that could be achieved by primary coronary angio-
ion therapy. If, as I suspect, there was much a longer time to the
in understanding the relative merits of these 2 forms of reperfu-
tion of symptoms in “many patients, at a time when a little
benefit might be expected from the procedure” in terms of a
reduction in early mortality. One can only wonder how much
better the PTCA patients would have done had they been taken
directly from the emergency room to the catheterization labor-
tory, as most patients with acute myocardial infarction are when
treated at hospitals that offer direct angioplasty.

In addition, the investigators failed to provide data regarding
the time from hospital admission to the administration of
thrombolytic therapy or to the initiation of the angioplasty
procedure (preferably the time to first balloon inflation). Had this
information been included, their study might be of some benefit
in understanding the relative merits of these 2 forms of reperfu-
sion therapy. If, as I suspect, there was much a longer time to the
initiation of angioplasty than to the administration of
thrombolytic therapy, this study provides little insight into the
most appropriate treatment for patients with acute myocardial
infarction. The finding that patients alive at 5 days were 2.85
times as likely to be alive at 1 year if they had received PTCA is
all the more remarkable given the study design.

Several of the largest randomized trials evaluating these
procedures (eg, Primary Angioplasty in Myocardial Infarction
trial [PAMI] and Global Use of Strategies to Open Occluded
Coronary Arteries in Acute Coronary Syndromes [GUSTO IIb])
cluded many small community hospitals to better characterize
the results that could be achieved by primary coronary angiop-
asty in the “real world,” and these studies found that primary
angioplasty was associated with a significantly better clinical
outcome than thrombolytic therapy.3,5

I would appreciate any additional information about time to
 treatment the investigators can provide.

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1. Berger PB, Ellis SG, Holmes DR Jr, et al. Relationship between delay in
performing direct coronary angioplasty and early clinical outcome in
patients with acute myocardial infarction: results from the global use of
strategies to open occluded arteries in Acute Coronary Syndromes
2. Berger PB, Bell MR, Holmes DR Jr, et al. Time to reperfusion with direct
 coronary angioplasty and thrombolytic therapy in acute myocardial
angioplasty and intravenous thrombolytic therapy for acute myocardial
infarction by primary coronary angioplasty or intravenous thrombolysis
in the “real world:” one-year results from a nationwide French survey.
5. The Global Use of Strategies to Open Occluded Coronary Arteries in
Acute Coronary Syndromes (GUSTO IIb) Angioplasty Substudy Inves-
tigators. A clinical trial comparing primary coronary angioplasty with
tissue plasminogen activator for acute myocardial infarction. N Engl

Response

We thank Dr Berger for his comments, which draw atten-
tion to the very object of our report. We certainly recognize
that primary angioplasty performed by well-trained interven-
tionists in appropriate acute care surroundings and in the first
hours after the onset of myocardial infarction is superior to
intravenous thrombolysis. However, in most randomized tri-
als, the thrombolysis regimen could not be considered opti-
mal, and in the Global Use of Strategies to Open Occluded
Coronary Arteries in Acute Coronary Syndromes (GUSTO
IIb) trial, the results of mortality and reinfarction at 6 months
are not statistically different between treatment with primary
percutaneous transluminal coronary angioplasty (PTCA) and
accelerated tissue-type plasminogen activator.1 The purpose
of our study, however, was to determine whether the practice
of PTCA performed at the acute stage of myocardial infarc-
tion, on the scale of a whole country, proved beneficial
compared with intravenous thrombolysis; both modes of
reperfusion therapy were taken into account as they were used
“in the real world” and not according to ideal recommenda-
tions (ie, thrombolysis included any type of thrombolytic
treatment, and PTCA included all patients with symptom
onset within 6 hours of hospital admission who had PTCA
performed within 24 hours of admission).

In everyday life, it is not uncommon that a patient may be
referred for primary PTCA (and therefore denied the use of
intravenous thrombolysis) and that the time from admission to
reopening of the artery is longer than initially expected because
of various impediments. In France, most patients with myocar-
dial infarction are taken from their home to an Intensive Care
Unit by emergency ambulances with medical staff onboard.
The scope of patients treated with primary PTCA ranges from
patients who are taken directly from the ambulance to the
catheterization laboratory, bypassing the emergency room and
the Intensive Care Unit, to patients initially referred to “second-
ary” hospitals and then referred to a tertiary center with primary
PTCA facilities; therefore, the actual time from symptom onset
to PTCA is highly variable. We recognize that the lack of
information regarding the exact time from hospital admission to
first balloon inflation in our database is a limitation of the study,
but that does not alter the study’s main message: overall, in
France, patients treated with angioplasty at the acute stage of
myocardial infarction did not fare better than those treated with
thrombolysis.
Finally, Dr Berger misinterpreted the data in Table 5 of our article. In patients alive at 5 days, the risk of being dead at 1 year is actually higher in those initially treated with PTCA than in those initially treated with thrombolysis.

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