Variation in patient management and outcomes for acute coronary syndromes in Latin America and North America: Results from the Platelet IIb/IIIa in Unstable Angina: Receptor Suppression Using Integrilin Therapy (PURSUIT) trial

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Background  Although more than 9500 patients have been enrolled in major clinical trials in Latin America, practice patterns in this region have rarely been examined. We sought to compare characteristics, resource utilization, and outcomes of patients treated for acute coronary syndromes in Latin America with those in North America.

Methods  The Platelet IIb/IIIa in Unstable Angina: Receptor Suppression Using Integrilin Therapy Trial (PURSUIT) enrolled 10,948 patients with non-ST-segment elevation acute coronary syndromes, including 585 in Latin America and 4358 in North America. We analyzed regional differences in patient groups, treatment patterns, and outcomes and used logistic regression analysis to identify association of enrollment region and survival.

Results  For patients in Latin America, the length of hospital stay was significantly longer (10 [7, 15] days vs 6 [4, 9], P < .001). Angiograms, angioplasty, and bypass surgery were significantly less common in Latin America (46.2%, 17.6%, and 11.3% vs 79.4%, 33.6%, and 19.4%, P < .001). Thirty-day death/myocardial infarction was not significantly higher, although mortality alone was significantly higher (6.8% vs 3.1%, P < .001). After adjustment for baseline characteristics, enrollment in Latin America remained an independent predictor for death at 30 days (odds ratio [OR] [95% confidence interval (CI)] 2.42 [1.60–3.67] and persisted at 6 months (OR [95% CI] 2.5 [1.8-3.4]).

Conclusions  Latin American patients treated for acute coronary syndromes were managed less invasively and were twice as likely as their North American counterparts to die within 6 months. This mortality difference was not explained by imbalances in baseline risk. (Am Heart J 2001;141:391-401.)

With the globalization of clinical research in cardiology, Latin American hospitals have become actively involved in large multicenter clinical trials over the last decade. More than 9500 Latin American patients have been enrolled in major clinical trials. However, practice patterns in Latin America have rarely been examined or compared with those of other regions. Only one study, the Organization to Assess Strategies for Ischemic Syndromes (OASIS)-2 Registry, analyzed resource use and outcomes in a Latin American country. This analysis of acute coronary syndromes management in Brazil may be poorly representative of the rest of the region because 90% of the participating hospitals had catheterization facilities and a high proportion of patients underwent coronary angiography.
enrollment, new or repeat CK-MB fraction elevation above upper limit of normal after 18 hours, or CK-MB elevation above three times the upper limit of normal after percutaneous coronary intervention (PCI) and above five times the upper limit of normal after bypass surgery. Suspected infarctions were identified by a computerized review of the patient database and adjudicated by a blinded clinical events committee according to clinical, electrocardiographic, and enzymatic data. Significant coronary artery disease was defined by the presence of more than 50% narrowing in one of the major coronary arteries. Left ventricular function was categorized according to ejection fraction as normal (>50%), mild dysfunction (between 40% and 49%), moderate dysfunction (between 25% and 39%), and severe dysfunction (<25%) as visually assessed by the principal investigators at each site.

Data on the availability of cardiac catheterization, angioplasty, and bypass surgery at participating hospitals were obtained from the site-descriptor database. The information on public/private status for Latin American hospitals was obtained through a phone interview with the principal investigators in each country.

**Statistical analysis**

Continuous variables are presented as median values with interquartile ranges. Discrete variables are expressed as frequencies with percentages. Comparisons between Latin American and North American groups were examined by either a conventional chi-square or the Fisher exact test for dichotomous variables and the Wilcoxon rank sum test for continuous variables. Results were interpreted as statistically significant when \( P < .05 \). The \( P \) values were not adjusted for the multiple comparisons in this analysis.

Regional differences in treatment effect were analyzed including only patients enrolled in the placebo and the higher epifibatide dose arms. The lower dose arm was dropped after 3218 patients were randomized as recommended by the independent Data and Safety Monitoring Committee. Other statistical analyses in this study included patients randomized to the three arms of the trial to increase the statistical power of the comparisons.

Multivariable logistic regression analysis was used to identify any independent association between region of enrollment and 30-day survival. In this model, Western Europe was adopted as the reference region for geographic comparisons and included demographics and clinical characteristics at presentation. The predictive accuracy expressed as the c-index for this model was 0.814, which reflects a good ability to discriminate between patients who did or did not die at 30 days. With use of the same multivariable model without the region covariate, predicted survival was determined for every patient. The predicted survival was then compared between North American and Latin American patients with a Wilcoxon rank sum test.

**Results**

**Patient characteristics**

A total of 585 patients were enrolled in 68 hospitals from 8 Latin American countries and 4358 patients were enrolled in 307 hospitals in North America. Table I depicts the distribution of enrollment by country. Com-

### Table I. Latin American enrollment by country

<table>
<thead>
<tr>
<th>Country</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mexico</td>
<td>200</td>
<td>34.2</td>
</tr>
<tr>
<td>Argentina</td>
<td>151</td>
<td>25.8</td>
</tr>
<tr>
<td>Venezuela</td>
<td>93</td>
<td>15.9</td>
</tr>
<tr>
<td>Colombia</td>
<td>61</td>
<td>10.4</td>
</tr>
<tr>
<td>Chile</td>
<td>46</td>
<td>7.9</td>
</tr>
<tr>
<td>Guatemala</td>
<td>20</td>
<td>3.4</td>
</tr>
<tr>
<td>Uruguay</td>
<td>9</td>
<td>1.5</td>
</tr>
<tr>
<td>El Salvador</td>
<td>5</td>
<td>0.9</td>
</tr>
<tr>
<td>Total</td>
<td>585</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Geographic differences in management patterns of patients with ST-elevation myocardial infarction (MI) within the United States and between the United States and other countries have been extensively studied. Despite regional variations in the process of care, no differences in survival have been detected. A recent analysis from the Platelet IIb/IIIa in Unstable Angina: Receptor Suppression Using Integrilin Therapy (PURSUIT) trial, an international study of acute coronary syndromes without ST elevation, identified region of enrollment as an independent predictor for 30-day death or MI. Furthermore, enrollment in Latin America was associated with increased mortality.

The purpose of this study was to compare characteristics, resource utilization, and outcomes of patients treated for acute coronary syndromes in Latin America with those in North America (United States and Canada). We hope to identify factors that may explain this association between enrollment in Latin America and increased mortality.

**Methods**

**Patient population**

The design and results of the PURSUIT study have been published elsewhere. Between November 1995 and January 1997, 10,948 patients were randomized in 726 participating hospitals in 28 countries. Briefly, patients with ischemic chest pain at rest within the previous 24 hours and either creatine kinase subfraction MB (CK-MB) elevation or electrocardiographic changes were randomly assigned in a double-blind manner to placebo or 2 regimens of epifibatide. Study drug was infused for 72 hours or until discharge, whichever occurred first. Patient management decisions, including medical therapy, cardiac catheterization, and revascularization, were left to the treating physician. If catheterization and angioplasty were performed, continuation of drug for 24 hours after the procedure was recommended. Aspirin and intravenous or subcutaneous heparin were also recommended in all patients. Thrombolytic therapy and other glycoprotein IIb/IIIa inhibitors were not administered during epifibatide infusion.

The primary end point of PURSUIT was the composite of all-cause mortality or nonfatal MI at 30 days. MI was defined as new chest pain and ST-segment elevation within 18 hours of
pared with North Americans, Latin Americans were younger, shorter, lighter, and had fewer previous revascularization procedures (Table II). On hospital admission, Latin Americans were more likely to have electrocardiographic changes (ST-segment depression and T-wave inversion) and less likely to be diagnosed with enrollment MI than were North Americans. Other baseline characteristics were not substantially different (Table III).

**Resource utilization**

In Latin America patients were more likely to be hospitalized in an intensive/coronary care unit than were their North American counterparts (85.1% vs 56.7%, *P* = .001). Intermediate-care telemetry beds were more frequently used in North America (24.6% vs 7.3%, *P* = .001). The median (interquartile range) length of stay was substantially longer in Latin America, with 5 (4, 7) days in intensive care and 10 (7, 15) days in hospital versus 2 (1, 4) days in intensive care and 6 (4, 9) in hospital in North America (*P* < .001 for both comparisons).

The use of cardiac enzymes for the diagnosis of enrollment MI (within 18 hours of randomization) and subsequent MI (after 18 hours of randomization) in Latin America is shown in Table IV.

### Table II. Baseline characteristics

<table>
<thead>
<tr>
<th></th>
<th>Latin America (n = 585)</th>
<th>North America (n = 4358)</th>
<th><em>P</em> value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (y)</td>
<td>60 [52, 67]</td>
<td>63 [53, 71]</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Female sex (%)</td>
<td>217 [37.1%]</td>
<td>1496 [34.3%]</td>
<td>.19</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>73 [63, 83]</td>
<td>81.7 [70.7, 93.2]</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Height (cm)</td>
<td>165 [160, 172]</td>
<td>172.0 [163, 178]</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Body mass index [kg/m²]</td>
<td>26.3 [24.1, 29.1]</td>
<td>27.8 [24.7, 31.3]</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Hypertension</td>
<td>365 [62.4%]</td>
<td>2637 [60.5%]</td>
<td>.39</td>
</tr>
<tr>
<td>Diabetes</td>
<td>152 [24.3%]</td>
<td>1138 [26.1%]</td>
<td>.34</td>
</tr>
<tr>
<td>Hypercholesterolemia</td>
<td>217 [37.1%]</td>
<td>1780 [44.6%]</td>
<td>.001</td>
</tr>
<tr>
<td>Current smoker</td>
<td>178 [30.5%]</td>
<td>1346 [31.1%]</td>
<td>.78</td>
</tr>
<tr>
<td>Prior MI</td>
<td>207 [35.4%]</td>
<td>1492 [34.3%]</td>
<td>.61</td>
</tr>
<tr>
<td>Prior congestive heart failure</td>
<td>46 [7.9%]</td>
<td>448 [10.3%]</td>
<td>.07</td>
</tr>
<tr>
<td>PVD</td>
<td>31 [5.3%]</td>
<td>361 [8.3%]</td>
<td>.012</td>
</tr>
<tr>
<td>Prior stroke</td>
<td>14 [2.4%]</td>
<td>196 [4.5%]</td>
<td>.018</td>
</tr>
<tr>
<td>Prior PTCA</td>
<td>34 [5.8%]</td>
<td>914 [21.0%]</td>
<td>.001</td>
</tr>
<tr>
<td>Prior CABG</td>
<td>35 [6.0%]</td>
<td>855 [19.6%]</td>
<td>.001</td>
</tr>
</tbody>
</table>

**PVD**, Peripheral vascular disease; **PTCA**, percutaneous transluminal coronary angioplasty; **CABG**, coronary artery bypass grafting.

### Table III. Hospital presentation

<table>
<thead>
<tr>
<th></th>
<th>Latin America (n = 585)</th>
<th>North America (n = 4358)</th>
<th><em>P</em> value</th>
</tr>
</thead>
<tbody>
<tr>
<td>MI at enrollment</td>
<td>185 [32%]</td>
<td>2101 [48.4%]</td>
<td>.001</td>
</tr>
<tr>
<td>Angina before qualifying event</td>
<td>475 [81.2%]</td>
<td>3370 [77.5%]</td>
<td>.043</td>
</tr>
<tr>
<td>Symptom onset to randomization (h)</td>
<td>11 [6, 17]</td>
<td>12 [6, 20]</td>
<td>.0001</td>
</tr>
<tr>
<td>ST depression &gt;0.5 mm</td>
<td>259 [44.3%]</td>
<td>1742 [40.0%]</td>
<td>.047</td>
</tr>
<tr>
<td>ST elevation &gt;0.5 mm</td>
<td>96 [16.4%]</td>
<td>721 [16.5%]</td>
<td>.935</td>
</tr>
<tr>
<td>ST changes</td>
<td>336 [57.4%]</td>
<td>2299 [52.8%]</td>
<td>.001</td>
</tr>
<tr>
<td>T-wave inversion</td>
<td>359 [61.4%]</td>
<td>2149 [49.3%]</td>
<td>.001</td>
</tr>
<tr>
<td>No electrocardiographic changes</td>
<td>17 [2.9%]</td>
<td>588 [13.5%]</td>
<td>.001</td>
</tr>
<tr>
<td>Systolic blood pressure</td>
<td>127 [110, 140]</td>
<td>128 [113, 142]</td>
<td>.0008</td>
</tr>
<tr>
<td>Diastolic blood pressure</td>
<td>80 [70, 84]</td>
<td>70 [61, 80]</td>
<td>.0001</td>
</tr>
<tr>
<td>Heart rate</td>
<td>75 [64, 83]</td>
<td>71 [62, 82]</td>
<td>.0008</td>
</tr>
</tbody>
</table>

### Table IV. Use of cardiac enzymes for diagnosis of enrollment and subsequent MI

<table>
<thead>
<tr>
<th></th>
<th>Latin America (n = 585)</th>
<th>North America (n = 4358)</th>
<th><em>P</em> value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total CK (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤18 h</td>
<td>571 [97.6]</td>
<td>4327 [99.2]</td>
<td>.001</td>
</tr>
<tr>
<td>&gt;18 h</td>
<td>426 [72.8]</td>
<td>2757 [63.5]</td>
<td>.001</td>
</tr>
<tr>
<td>CK-MB (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤18 h</td>
<td>534 [91.3]</td>
<td>3842 [88.2]</td>
<td>.026</td>
</tr>
<tr>
<td>&gt;18 h</td>
<td>366 [62.6]</td>
<td>2237 [51.3]</td>
<td>.001</td>
</tr>
</tbody>
</table>
Latin American and North American patients underwent stress tests equally often during hospitalization (16.1% vs 14.0%, \( P = .2 \)). No regional differences were found in positive (43.6% vs 42.8%), negative (40.4% vs 44.2%), and indeterminate (16.0% vs 13.0%) results among patients who underwent a stress test.

The proportion of hospitals with cardiac catheterization and revascularization facilities was similar in both regions (Table V). Despite this, the timing and rates of invasive cardiac procedures were significantly different, showing a less-invasive style of management in Latin America. The use of coronary angiograms, PCI, and coronary artery bypass grafting during hospitalization were 46.2%, 17.6%, and 11.3% versus 79.4%, 33.6%, and 19.4% in Latin America and North America, respectively (\( P < .001 \)). These procedures were also performed earlier during hospital admission in North America (Figure 1).
Among patients who underwent coronary angiography by 30 days, the presence and extent of coronary disease were similar in North American and Latin American patients. However, of patients who had a left ventriculogram, those in Latin America had more left ventricular dysfunction (Table VI).

Cardiac medications

The use of cardiac medications during hospitalization and at discharge differed in Latin America and North America (Table VII). In Latin America patients were treated more often with angiotensin-converting enzyme inhibitors and oral nitrates and less often with heparin, lipid-lowering agents, β-blockers, and intravenous nitrates. Ticlopidine and abciximab use, commonly associated with percutaneous interventions, was much greater in North America. The effectiveness of heparin treatment, measured as the median (interquartile range) maximum activated partial thromboplastin time during the initial 48 hours, was 70 (51.2, 110) seconds for Latin American patients and 76 (55.5, 110) seconds for their North American counterparts ($P = .009$).

Although Latin Americans were less likely to receive intravenous heparin, the median duration (interquartile range) of heparin therapy was longer compared with North Americans.

Latin American private versus public health systems

In Latin America a total of 36 private and 32 public hospitals enrolled 243 and 342 patients, respectively. Private hospitals were more likely to have facilities for cardiac catheterization (89% vs. 50%, $P < .01$), coronary intervention (81% vs 41%, $P < .01$), and bypass surgery (81% vs 38%, $P < .01$) than public hospitals. Compared
with public hospitals, private institutions had higher rates of coronary angiography (65% vs 40%, \(P < .001\)), PCI (30% vs 10%, \(P < .001\)), and bypass surgery (17% vs 10%, \(P < .01\)). The median (interquartile range) hospital length of stay was 9 (6, 12) days in private hospitals and 10 (8, 16) days in public hospitals (\(P = .0005\)). Intensive care stay, however, was identical in both types of hospitals at 5 (4, 7) days.

**Major clinical outcomes**

The primary study end point, 30-day death or MI, was not significantly higher in Latin America than in North America (15.4% vs 13.6%, \(P = .18\)). However, when examining mortality alone, patients enrolled in Latin America were almost twice as likely to die at 30 days compared with those in North America (6.8% vs 3.1%, \(P < .001\)). After adjustment for demographics
and hospital presentation characteristics, enrollment in Latin America remained an independent predictor for 30-day death (odds ration [OR] 95% confidence interval [CI]: 2.42, 1.60–3.67). This difference persisted at 6 months and remained significant even after adjustment for imbalances in baseline risk (OR, 95% CI: 2.5, 1.8-3.4). The incidence of myocardial (re)infarction at 30 days was identical for the two regions (Table VIII).

After adjustment for the severity of illness at baseline with a multivariable model,12 the predicted rates of death were 1.78% (0.95, 3.66) for Latin Americans and 1.78% (0.88, 3.81) for North Americans ([P] = .9). The predicted rates of death or MI were 12.4% (9.38, 16.9) and 13.1% (9.11, 18.1) for Latin Americans and North Americans, respectively ([P] = .4). Therefore the differences in underlying risk for death and death or MI were not statistically different between Latin American and North American patients.

Outcomes at 30 days were not significantly different by public/private hospital category. The occurrence of death was 7.4% versus 6.4%, MI 10.7% versus 12.3%, and the composite rate (death or MI) was 14.8% versus 15.8% in private and public institutions, respectively. The difference in the composite end point between patients treated in public and private hospitals remained insignificant after adjustment for baseline risk (OR, 95% CI: 0.97, 0.6-1.6).

**Differences in treatment effect**

Figure 2 displays the treatment effect of eptifibatide in Latin America and North America. Unlike in North America, where patients treated with eptifibatide had lower 30-day rates of death and death or MI, eptifibatide-treated patients in Latin America had no statistically significant differences in death and death or MI at 30 days compared with placebo-treated patients.

**Discussion**

This study explored the process of care and outcomes of 585 patients treated for non-ST-segment elevation acute coronary syndromes in Latin America. It provides the first international comparison of Latin America as a region with North America (United States and Canada) with respect to these variables. In summary, the findings suggest that patient management in Latin America is more conservative and associated with higher mortality at 1 and 6 months than in North America. These differences in practice patterns and outcomes do not appear to be explained by differences in patient baseline characteristics.

Previous studies have addressed the influence of geographic variation on practice patterns and clinical outcomes in patients with coronary artery disease. Most of these comparisons, from large clinical trial databases, included only developed countries, such as Canada and the United States or compared the United States with other countries.7,8,10,11,15-17 These studies have attempted to assess whether an aggressive catheterization strategy for MI patients was associated with improved survival. Despite a better quality of life and less readmission for cardiac causes, patients treated in countries with an early invasive approach had no survival benefit over patients treated in countries with more conservative strategies.11,15

The simple design of PURSUIT allowed the enrollment of a broad spectrum of patients with results applicable to everyday clinical practice.13 Latin America was represented by 8 countries, but 60% of the enrollment occurred in Mexico and Argentina. However,
despite different social, cultural, and ethnic characteristics, Latin American nations share common features. Over the last two decades, Latin America has had dramatic political and economic changes with increased economic recession and unemployment, likely affecting health care delivery. In support of this, infant mortality, a widely accepted public health indicator, is two to six times higher in Latin America than in North America. Lower health expenditures from the gross domestic product in Latin America compared with the United States and Canada may result in more constrained resource use in the health care system.

Our data showed wide variation in the use of invasive cardiac procedures in Latin America and North America, despite the same proportion of patients undergoing stress tests and similar availability of diagnostic and interventional catheterization laboratories and surgical facilities in both regions. The conservative practice pattern observed in Latin America is supported by clinical trial results showing limited survival benefit of invasive versus conservative strategies for patients with acute coronary syndromes. Also, fewer cardiologists in Latin America are trained to perform cardiac catheterization. Cardiology training programs in Latin America may not provide sufficient catheterization training in the core curriculum. Moreover, in a survey of 404 trainees by the Argentine Council of Cardiology Residents, 15% did not have a catheterization laboratory rotation and 52% believed that cardiology training programs were inadequate. After 4 years of training, young cardiologists in Latin America may not be prepared to perform diagnostic angiograms independently in practice. In addition, training opportunities may be limited in Mexico, where procedural volume is low and only 16% of the hospitals with cardiac catheterization offer training programs.

Although the use of diagnostic catheterization varied, the presence and extent of significant coronary disease was similar in Latin Americans and North Americans. This finding parallels the results of a study by Batchelor et al, which showed that a more conservative catheterization strategy in Canada failed to identify a higher proportion of patients with three-vessel or left main disease compared with a more invasive strategy in the United States. However, in our study, Latin Americans undergoing catheterization had a higher prevalence of left ventricular dysfunction, suggesting potential for a greater survival benefit after coronary revascularization than their North American counterparts.

An interesting observation was the high utilization of critical care beds and long hospitalization times in Latin America, suggesting insufficient availability of step-down monitored beds at the hospitals in this region. This concurs with a study from Argentina in which 85% of patients hospitalized for chest pain were initially admitted to an intensive care bed. Long hospitalization times for MI patients, ranging from 9 to 11 days, have been previously reported in Latin America.

The restricted access to catheterization may have influenced Latin American physicians to prolong observation periods and therefore inefficiently use resources such as hospital beds. Previous studies suggest that patients with MI can be safely discharged after short hospital stays with no increase in adverse cardiac event rates.

We observed different treatment strategies within Latin America. Patients treated in private hospitals were managed more invasively than in public hospitals. This was likely related to a greater availability of catheterization laboratories and surgical facilities at private hospitals. These differences have been demonstrated to be major determinants of the use of angiography and revascularization.

Mortality at 1 and 6 months was 2-fold higher in Latin America than in North America. At enrollment, Latin Americans were more likely to have ST changes than were North Americans, who were more likely to be enrolled with cardiac enzymes above the upper limit of normal. This mortality difference is paradoxical, given the younger age and lower prevalence of enrollment MI among Latin American patients. Adjustment for severity of illness at baseline showed that the underlying risk for death and death or MI was similar in both regions. Therefore imbalances in baseline characteristics were unlikely to explain the mortality difference. Multiple factors affecting the process of care experienced by Latin Americans may explain the mortality difference observed in the current study. More restrictive use of cardiac procedures itself was not likely a factor in this difference because many investigations with different study designs have failed to demonstrate better outcomes with an invasive strategy. However, the use of cardiac medications differed between Latin America and North America, potentially contributing to the difference in mortality. Evidence-based treatments such as heparin, β-blockers, and lipid-lowering agents were used less often in Latin America during hospitalization and at discharge. In fact, data from the Global Use of Strategies to Open Occluded Coronary Arteries in Acute Coronary Syndromes (GUSTO-IIb) study showed that mortality could be significantly reduced if treatments recommended in the practice guidelines published by the Agency of Health Care Policy and Research were optimally applied. Variables not measured in this study, such as degree of training of medical and paramedical personnel, number of beds per nurse, procedure rooms per catheterization laboratory, hospital technology, and insurance status, may have also played a role. In addition, the limited budget and the expansion of investor-owned managed-care plans in Latin America...
may interfere with the delivery of adequate health care.57-59

Because of the higher use of revascularization procedures, a greater occurrence of events would be expected among North American than among Latin American patients. Comparisons of treatment strategies for coronary disease have shown that early adverse cardiac events tend to occur more often in patients treated with percutaneous or surgical revascularization than in those treated medically.25,40 Nevertheless, the rates of myocardial infarction or reinfarction in Latin America and North America were identical.

Unlike in North America, there was no beneficial treatment effect of epifibatide in Latin America at 30 days. However, with the small sample size, we could not exclude a beneficial treatment effect because the upper boundary of the 95% confidence interval extended well into the positive range. The baseline risk of Latin American and North American patients was similar; therefore treatment differences in this randomized study likely resulted from the different processes of care. Latin American patients less frequently underwent revascularization procedures, and at a later time, than their North American counterparts did. Although medically treated patients with acute coronary syndromes benefit from glycoprotein IIb/IIIa inhibition, enhanced benefit has been demonstrated for patients treated with early percutaneous coronary intervention.3,41 Latin American patients more often underwent percutaneous interventions after completion of epifibatide infusion, therefore missing the protective effect of a glycoprotein IIb/IIIa inhibitor.

Limitations

We intentionally compared acute coronary syndrome management in Latin America with North America in this analysis. North American practice patterns and outcomes have been well defined in international comparisons.7,8,10,11,15-17 The elevated procedure use observed in North America was likely biased by a higher enrollment in the United States than in Canada. Post-MI management has been shown to be more invasive in the United States than other countries,15,17,42 probably exaggerating the contrast observed in procedure use between the regions. However, rates of coronary angiography, PCI, and coronary artery bypass grafting in Latin America were even lower than in Western Europe in the PURSUIT study.13

Participating hospitals in PURSUIT were not likely to be representative Latin American institutions because of research interests and subspecialty resources. Given this fact, we could speculate that differences in outcomes and resource use may be even greater in actual practice.

The number of patients from Latin America was relatively small, and enrollment occurred in several countries with differing health care systems and practice patterns. However, the use of invasive procedures, use of critical care beds, and length of stay reported in this study resemble data from previous publications.27,28,43-45 We did not intend to provide definitive conclusions but to generate hypotheses and raise important public health care issues that should be seriously addressed in studies specifically designed to measure process of care and outcomes of patients for heart disease in Latin America.

Conclusions

We reported substantial differences in the process of care and outcomes of patients treated for non-ST-elevation coronary syndromes in Latin America and North America. Latin American patients treated for acute coronary syndromes were managed less invasively and were twice as likely to die within 6 months as their North American counterparts. The mortality difference was not explained by imbalances in baseline risk. Multiple factors related to the process of care could have caused this outcome difference. The overall findings of this study have meaningful public health care implications and deserve further investigation.

We would like to acknowledge the excellent editorial assistance of Mr John M. Daniel in the preparation of the manuscript.

References


