Predicting Death in Patients with Acute Type A Aortic Dissection

To the Editor:

The study by Mehta et al. entitled “Predicting Death in Patients With Acute Type A Aortic Dissection” describes a logistic regression model used for death prediction among these patients. Table 4 in that article shows that the abrupt onset of pain at the time of presentation produces an odds ratio of 2.6 (95% confidence interval 1.22 to 5.54); this certainly suggests that acute pain strongly predicts death. The raw data and our clinical experience, however, indicate that acute pain is very common when aortic dissection develops. It was present in 89% of the patients who died and 82.3% of those who survived. This is yet another example of the misleading impression that often results when odds ratios are used to describe the relative frequency of findings or events that are already very common in the studied population (84.5% of all the aortic dissection patients had such pain).

The statistical output of logistic regression analysis invariably generates odds ratios rather than risk ratios. Risk ratios are much more intuitive and easier for the non-statistician, as well as most clinicians, to comprehend. When the frequency of the studied variable exceeds 10% (true also for age, abnormal ECG, pulse deficit, and hypotension in that article), then odds ratios may be misleading. Similar confusion regarding the interpretation of odds ratios was extensively discussed in relationship to a widely quoted paper that purported to show a major degree of physician bias against cardiac catheterization in African Americans. Odds ratios and risk ratios are very similar and are virtually interchangeable when the study variable is present in <10% of the population at risk. Whenever the frequency is higher, several methods may be used to convert odds ratios to approximate risk ratios. Many believe that medical publications should report results as risk ratios whenever possible.

Michael Emmett, MD, MACP
Chairman
Department of Internal Medicine
Baylor University Medical Center
Dallas, Tex

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Michael Emmett

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