COMMENTARY

THE ECONOMICS OF ADJUNCTIVE THERAPIES IN CORONARY ANGIOPLASTY: DRUGS, DEVICES OR BOTH?

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Abstract

Oh and colleagues in Can J Clin Pharmacol Vol 11(2) Fall 2004:e202-e211; September 1, 2004 have provided a cost-effectiveness analysis (CEA) demonstrating that abciximab is more cost-effective than other commonly used therapies (for example, coronary artery stenting) and that it should be more universally used in PCI patients. The incremental cost-effectiveness ratio of $2,832 to $7,173 per life year gained with abciximab demonstrates greater value than almost any drug commonly used in cardiovascular medicine. Why then have physicians not routinely embraced abciximab?

Key Words: abciximab, cost-effectiveness, percutaneous coronary intervention

Glycoprotein (Gp) IIb/IIIa platelet receptor blockers have been available for a decade, but their use in patients with acute coronary syndromes (ACS) and in patients undergoing percutaneous coronary intervention (PCI) remains controversial. There have been a multitude of randomized controlled trials indicating that GP IIb/IIIa receptor blockers decrease subsequent ischemic events in ACS and PCI patients. Furthermore, analyses of these data indicate that GP IIb/IIIa receptor blockers attain a cost-effectiveness similar to other therapies commonly used in cardiovascular medicine, such as statins and antihypertensive therapy.[1] Despite this matured data there is still relatively low utilization of GP IIb/IIIa receptor blockers, and there is substantial disparity of use amongst Canadian hospitals and by individual physicians within medical centers.

There may be several reasons why these agents have not been more universally adopted. First, is the issue of variable efficacy, only abciximab has demonstrated a small and variable mortality benefit in efficacy trials. The majority of benefit derived from GP IIb/IIIa receptor blockers has been in the prevention of post-PCI CK elevation, an outcome of uncertain relevance in these patients. In the PURSUIT and ESPRIT trials eptifibatide prevented post-PCI CK elevations, but this did not translate into any mortality benefit despite collectively randomizing over 13,000 patients.[2,3] If the prevention of post-PCI CK elevations is clinically relevant, why did these and other trials not show any mortality benefit? A second barrier to a more universal use of GP IIb/IIIa receptor blockers has been their cost. Canadian cardiac catheterization centers have been struggling to contain the escalating costs associated with PCI procedures and have been reluctant to add the $1500 per patient cost associated with using abciximab.

Oh and colleagues in Can J Clin Pharmacol Vol 11(2) Fall 2004:e202-e211; September 1, 2004 (www.cjcp.ca/hm/?id=48) have provided a cost-effectiveness analysis (CEA) demonstrating that abciximab is more cost-effective than other commonly used therapies (for example, coronary artery stenting) and that it should be more universally used in PCI patients. The incremental cost-effectiveness ratio of $2,832 to $7,173 per life year gained with abciximab demonstrates greater value than almost any drug commonly used in cardiovascular medicine. Why then have physicians not routinely embraced abciximab?

One reason might be that physicians have difficulty applying the clinical trial data used in

the CEA to the practice of clinical medicine in 2004. The clinical data used in the Oh et al CEA was primarily from the EPISTENT trial and secondarily EPIC and EPILOG. These trials enrolled patients undergoing PCI almost a decade ago. The PCI patients in some of these trials had hospital lengths of stay of a week, compared to less then 24 hours in present day patients. Catheterization laboratory technology, PCI devices and adjunctive therapy have all evolved since then. Simple contemporary therapies such as the more aggressive use of clopidogrel may also put a limit to the incremental benefits attainable with abciximab.

Second, physicians have difficulty quantifying the benefits associated with the prevention of post-PCI CK elevations. The main benefit of GP IIb/IIIa receptor blockers in this and other CEA's has been derived from the prevention of post-PCI myocardial infarction, which has been assumed to result in lower future medical costs over the lifetime of the patient. These lower future costs would then offset the initial higher acquisition costs associated with abciximab. Unfortunately we don't have an actual quantification of the lower healthcare cost associated with prevention of post-PCI CK elevation and it must be estimated. The multiple assumptions required and the complex modeling utilized to derive such a cost creates uncertainty. At one extreme, some cardiologists have argued that these post-PCI CK elevations have little direct influence on prognosis.[4]

Patients with post-PCI CK elevations are generally left with an open artery, little deterioration in left ventricular function and no increase in arrhythmogenesis. Acceptance of this hypothesis would result in no cost savings attributable to a reduction in post-PCI CK elevations. At the other extreme, physicians have equated these post-PCI CK elevations as having similar consequences as spontaneous acute myocardial infarctions. Such infarcts are often associated with a closed artery, diminished left ventricular function, increased arrhythmogenesis and have significant future cost implications. Future healthcare costs associated with these views are very different and the results of a CEA will be substantially different depending upon the cost assumptions incorporated into the analysis.

The third and largest barrier to widespread acceptance of abciximab is the budget implications. Canadian provincial governments generally provide their hospitals with a fixed budget for performing a defined number of PCI procedures per annum. In Ontario this budget incorporates the use of abciximab in 35% of PCI procedures. If a PCI center accepts the findings of the CEA and mandates the use of abciximab in 100% of PCI procedures, then it would have to perform fewer overall PCI procedures per annum in order to stay within its fixed budget (assuming no new funds were added to the budget). The question then arises: Should we deny some patients the opportunity to undergo PCI in order to give abciximab to all PCI patients?

The analysis by Oh et al will help to quantify the benefits of abciximab when compared to other PCI devices such as drug-eluting stents and aid in the comparison of the incremental benefit of abciximab to other therapies competing for our healthcare budgets. Perhaps its most important role will be in providing useful information to provincial healthcare authorities when they determine the budgets for interventional cardiac laboratories.

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