in the present cost-conscious climate in an accurate, diligent, reproducible and reliable fashion. The cure for ‘stress echo folly’ is at hand.

References


Cost-effective treatment of acute coronary syndromes—IIb or not IIb?

See page 1253 for the article to which this Editorial refers

There has been a dramatic growth in medical care costs in most western countries over the past 25 years; cardiology has been one of the prime contributors. Within the spectrum of coronary heart disease, acute coronary syndromes account for a considerable portion of these human and economic costs. Worldwide hospitalizations for unstable angina and non-Q wave myocardial infarction are estimated to be in excess of two million patients annually, and approximately one million patients in Europe suffer from acute coronary syndromes. In the United States, acute coronary syndrome is the leading cause of admission to coronary care units; approximately 10–12% of these patients develop a myocardial infarction, and 2–5% die within 30 days of experiencing unstable angina or non-Q wave myocardial infarction.

The last decade has been witness to a phenomenal expansion of therapies used in the treatment of patients with acute coronary syndromes. These therapeutic advances include routine use of improved antiplatelet and antithrombotic agents, such as the glycoprotein IIb/IIIa blockers and low molecular weight heparins.

The use of coronary intervention procedures in patients with acute coronary syndromes has also greatly expanded, for example, from 1987 to 1992 the number of catheterization and revascularization procedures performed in US Medicare patients increased by 45% and 70%, respectively[1]. Medical costs arise in a complex manner and their prediction is difficult; however, treatment-related factors (such as the decision to pursue a coronary intervention) can clearly drive up healthcare costs by more than 100%.

At the same time as healthcare costs were rising, studies from the field of outcomes research reported that considerable geographic variation in the practice of medicine existed, without demonstrable justification or differences in patient outcomes[2]. In particular, studies of aggressive revascularization have generally failed to show a reduction in myocardial infarction or death in patients with unstable coronary syndromes[3,4].

These developments have provided strong incentive for government, business and private consumers to call for increased accountability in medicine. In particular, while physicians in the past were free ‘to
do everything possible for every patient’, under the
new paradigm, they are required to demonstrate that
their therapeutic decisions are both effective and
come at a reasonable cost. This growing need to
demonstrate the ‘value’ of medical care requires that
cardiologists have a basic understanding of medical
cost assessment and cost-effectiveness analyses. Many
of the large trials on new therapeutic developments
in the treatment of acute coronary syndromes include economic substudies to show the positive

How cost-effective are different treatments for the
management of acute coronary syndromes? Aspirin
clearly is beneficial in the short- and long-term and is
highly cost-effective in this patient population. Beta-
blockers and statins are also likely to be effective and
cost-effective for longer term treatment[5].

Low molecular weight heparins have been reported
to be cost-saving compared to unfractionated heparin, with a saving of over $1000 per patient over
30 days[6]. Clearly, acute IIb/IIIa receptor blocker
therapy has been demonstrated to be beneficial in
patients with acute coronary syndromes and in par-
ticular in those undergoing coronary interventions.
On the other hand, IIb/IIIa inhibitors increase bleed-
ing complications in certain settings. These agents are
also expensive and thus, an examination on the short-
and long-term economic implications of these agents
is indicated.

In the first of these studies, Mark and colleagues[7]
have completed a cost analysis of IIb/IIIa inhibitor
use in patients receiving coronary intervention, using
the EPIC trial results. In this US trial, the total mean
baseline hospital costs (exclusive of study drug) were
almost identical in the placebo ($13 467), abciximab
bolus only ($13 401), and the bolus plus infusion
($13 401) treatment arms. Breakdowns of these
costs demonstrated that the decrease in ischaemic complications (approximately $600 per
patient) in the treatment arms was offset by higher
costs required to treat bleeding complications.

In contrast, in the 6 months following acute
hospitalization, treated patients required 23% fewer
hospitalizations and 22% fewer repeat revasculari-
zation procedures. This lower medical utilization pro-
duced a mean cost savings of $1270 per patient
treated. With a cost of $1407 for the abciximab bolus
and infusion regimen, the incremental 6 month cost
for this treatment averaged $293 per patient. Thus,
this agent was able to recoup almost all of the
initial cost of therapy required to produce significant
clinical benefits[7]. In a further analysis, McElwee and
Johnson[8] suggest that glycoprotein IIb/IIIa antago-
nists would not be cost-saving in acute coronary
syndromes at current prices, but they could still prove
cost-effective and estimate the price of treatment at
around $20 000 to $50 000 per life year gained. Although
no universal benchmarks exist most economists consider a therapy that adds a life at a
cost of $50 000 or less is economically attractive. In
comparison, the cost of coronary bypass surgery per
life year gained, measured over 5 years, has recently
been estimated to be $50 000–$90 000 for patients
with three-vessel disease[9].

In this issue Szucs et al.[9] analysed whether a
generalized use of tirofiban plus aspirin and heparin
might save direct healthcare costs as compared with
heparin and aspirin alone in patients with acute
 coronary ischaemic syndromes in Switzerland. An
incremental cost-consequence analysis was conducted
for the first 7 days of treatment. The analysis was
done on the basis of the PRISM PLUS results, and
the additional use of tirofiban resulted in the savings
of ECU 33 418 per 100 patients, achieved through a
reduction in the cost of treating refractory ischaemic
conditions and myocardial infarctions. The authors
conclude that the clinical efficacy of this glycoprotein
IIb/IIIa blocker translates into immediate economic
benefits for the hospital, at net savings of more than
SFR 500 per patient, and that the primary therapy
with tirofiban is an economically justified inter-
vention in the initial management of patients with
acute coronary syndromes in the Swiss hospital
setting.

This is a very important finding, because many
interventional cardiologists argue that aggressive
treatment with stenting of the culprit vessel, in
patients with acute coronary syndromes, gives
immediate pain relief and as well as an improvement
in outcome. As the general use of IIb/IIIa blockers is
rising, costs may stimulate hospital administrators to
cut down the budget for stents.

However, before we use this new class of drugs as a
cost-effective treatment approach in every patient
with acute coronary syndrome, we have to consider
three aspects. Firstly, unstable coronary artery dis-
ease has multiple aetiologies and is very hetero-
genous and thus, different therapies may be
indicated in different patients. If a non-occlusive
thrombus is the problem, a glycoprotein IIb/IIIa
blocker could be the solution. However, if coronary
artery spasm is the dominant problem, vasodilators
may be a better solution. Secondly, the economic
benefit of glycoprotein IIb/IIIs inhibition can be
maximized by targeting patients at higher risk, for
example those with elevated troponin T or troponin I.
We have to keep in mind that the results of the study
are only applicable to PRISM PLUS patients, who
are a relatively higher risk subgroup of patients with
acute coronary syndromes.
Finally, a short-term cost analysis over 7 days maybe misleading. While on the one hand a management strategy may increase initial hospital costs, it may also decrease the need for future interventions, as the study of Mark et al. has shown. On the other hand, an initial benefit, by avoiding early revascularization procedures, may be completely offset by just delaying the procedure up to a few weeks or months. In the 1 year follow-up of the TIMI IIIB trial it was shown that the revascularization rates in the initially conservatively and initially aggressively treated patients were almost identical after 1 year. Thus, to fully evaluate various treatment strategies and the economic benefits of glycoprotein IIb/IIIa blockade, a long-term perspective is required. Although this might not be important from the hospital point of view, it is unquestionably important from the socio-economic point of view.

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References


The careers of female cardiologists

See page 1276 for the article to which this Editorial refers

In several European countries about half the medical students are female, an increasing number of females graduate as MDs, and female cardiologists are not at all uncommon. However, there is an uneven distribution between male and female cardiologists in career positions and this is the subject of an article by Modena et al. in the present issue. The uneven representation is not specific for women in clinical practice. As emphasized by Modena et al., data from Italy reveal that among university teachers no more than 40% of assistant professors, 26% of associate professors, 11% of full professors and 8% of deans are women. Thus, females are increasingly uncommon in the higher ranks. One wonders whether they compete with males for these positions on equal terms.

Female leadership

Modena et al. mailed a questionnaire to 8000 members of the Italian Society of Cardiology. For both hospital and academic careers, advancement in rank was influenced by variables such as productivity, family and individual characteristics. Promotion to high positions was highly dependent upon time, as is typical in an internal labour market with staff ranked in hierarchical scales. In such a system seniority influences promotion decisions and in this context women appear to be disadvantaged. This pattern is, however, not unique for Italy.