# Hospital volume and mortality relation in PCI - Is there a need for modification of ACC/AHA percutaneous coronary intervention guidelines in Asia?

## *PKG'lerde hastane vaka sayıları ile mortalite ilişkisi-ACC/AHA'nın perkütan koroner girişim kılavuzlarında Asya ülkeleri için değişikliğe gerek var mı?*

The relationship between hospital volume and outcome relation in percutaneous coronary intervention (PCI) is important for patients, policy makers and referring physicians. Hospital volume is the explicit criterion for health care purchasers recommended by Leapfrog group. In accordance with current American College of Cardiology/American Heart Association (ACC/AHA) percutaneous coronary intervention (PCI) clinical practice guidelines, Leapfrog has established a minimum institutional volume requirement of 400 cases per year for hospitals offering PCI (1, 2). For these reason, centralization of PCI cases in core facilities has been advocated. This volume threshold is mainly based on studies originating from USA in the 1980s and 1990s which showed increased PCI mortality for patients treated at hospitals with annual volumes <400 cases (3, 4). However, there have been many changes in recent years in PCI practice by widespread use of low profile balloons, stents, glycoprotein IIb/IIIa inhibitors and intra-aortic balloon pumps. These changes and widespread PCI education opportunities increased interventional cardiologists' abilities and self-confidence, which raise the possibility that currently recommended hospital PCI volume threshold of 400 cases may no longer be appropriate.

Turkish Society of Cardiology published a national guideline for competency in interventional cardiology in 2004 and stated that 150 PCI cases/year is enough for a hospital to perform PCI. Recommended physician volume is 50 PCI cases/year. They stated that higher volume is better but setting an unrealistically high volume would deter hospitals and physicians from establishing PCI programs and restrict patient access to life saving therapies (5). Currently volume mortality statistics for PCI are not available for Turkey but they will be valuable to determine whether suggested guidelines are appropriate and can be generalized to other Asian countries.

A study representing contemporary PCI in clinical practice showed a small but significant volume-outcome relation for in-hospital mortality. However, this relation was only apparent in high-risk subgroups, such as patients presenting with acute myocardial infarction (6). It is unclear whether this minimum value standard applies to non-Western countries. A Japanese study enrolling 401 acute myocardial infarction patients from 11 hospitals between years 2004-2006 did not find an obvious relationship between hospital PCI volume and in-hospital outcomes (7). In a study from Taiwan, adjusted odds of 30-day mortality for patients undergoing PCI at medium-volume hospitals (200-399 cases/year) was not significantly different from those of patients treated at high-volume hospitals (>400 cases/year). This suggests that current ACC/AHA PCI hospital volume minimums may need to be re-evaluated in non-Western countries such as Taiwan (8).

Another western study of 362.748 patients found no evidence of higher in-hospital mortality in patients undergoing PCI at medium-volume hospitals (200-399 cases/year) compared with patients treated at hospitals with annual PCI volumes of 400 cases of more suggesting current ACC/AHA PCI hospital volume minimums might merit reevaluation (9).

In this issue of Anatolian Journal of Cardiology Kim et al. (10) found a significant different crude 30-day mortality rates according to hospital PCI volume, but did not find a relationship between hospital volume and 30-day risk-adjusted mortality rates following PCI in Korea. Their large study analyzing patient statistics between year 2003-2004 and involving 102 hospitals and 44.363 patients is valuable to show mortality trends which are not thoroughly published in Asian countries like in Europe and USA. Their study will lead to more detailed studies to define characteristics of low volume hospitals and operators which make them as successful as high volume centers when risk adjusted mortalities are compared. Their mortality values will set a benchmark and stimulate other Asian countries to determine their volume-mortality relations and implement guidelines according to the local resources, needs and physician qualifications. Although regionalizing care for less common, elective surgeries may be practical, regionalizing acute care, particularly for common medical conditions like acute myocardial infarction, seems both clinically and politically infeasible and may disrupt

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care for patient. More detailed studies should be done giving physician education and volume characteristics, stent usage, antiplatelet and anticoagulant use in Asian countries. Establishing common education goals and short courses for interventional cardiologists in Asian countries can be very useful. Those joint efforts can establish an "Asian alumni", improve cooperation between people with similar culture and local problems.

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