Stroke: a rare but devastating procedural complication of PCI

Stefan James*
Uppsala Clinical Research Centre, Uppsala, Sweden

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This editorial refers to ‘Stroke following percutaneous coronary intervention: type-specific incidence, outcomes, and determinants seen by the British Cardiovascular Intervention Society 2007–2012’, by C.S. Kwok et al., on page 1618.

Stroke is a rare but devastating procedural complication of percutaneous coronary intervention (PCI), occurring in 0.1–0.4% of PCI cases. However, when it occurs, it results in significant patient morbidity, prolonged hospitalizations, high medical costs, and an increased mortality. For the individual patient it may be the worst possible complication. Recent publications from randomized trials and registries have indicated that more than half of patients who have suffered from a PCI-related stroke complication and survived are left with residual neurological deficits, and a quarter of them are in need of skilled home care.

Therefore, it is of utmost importance to understand and describe the frequency, risks, consequences, and temporal trends of large real-world PCI populations. Large registries with unselected enrolment and the possibility of outcome assessment are particularly useful and important for evaluation of low frequency complications such as PCI-related stroke. With evolving technologies and continuously changing patient populations and characteristics, it is impossible for individual doctors or departments to notice changing patterns and to estimate the actual risk.

In a large observational study published in the present issue of the journal, Kwok et al. have used the rich database from the British Cardiovascular Intervention Society (BCIS) registry to describe the frequency of PCI-related stroke, temporal trends, risk factors, and the associated clinical outcome in a contemporary large PCI population during 2007–2012. The BCIS registry is well suited for this assessment. It reflects a large unselected real-world population including high-risk patients often excluded in clinical trials of pharmaceutical agents and devices. The study confirms the low overall risk of stroke and demonstrates that the incidence of ischaemic stroke is three-fold higher than that of haemorrhagic stroke. The study also shows that stroke is associated with a poor overall prognosis, with a seven-fold increase in 30-day death for ischaemic stroke and a 40-fold increase for haemorrhagic stroke.

The authors report that the haemorrhagic stroke rate has decreased over time while the rate of ischaemic stroke appears to have increased. The reasons for these changes are likely to be explained by changing medications and patient populations, as nicely shown by the study of Kwok et al. Thus, the patient population is getting older with more co-morbidities while the use of fibrinolytic therapy is decreasing. Important independent predictors of ischaemic stroke were age, female gender, prior valvular disease, prior history of stroke, and the use of circulatory support. Interestingly, the use of thrombus aspiration was also an independent stroke predictor in this study, in accordance with the recently published TOTAL trial. Similarly, in the SCAAR database, the risk of a neurological complication at PCI is four-fold higher in patients above the age of 80 as compared with those below the age of 60.

With this information in mind, should we be more restrictive in performing PCI in patients with higher risk of stroke? No; the benefit of PCI is fact greater in high-risk patients, and bypass grafting confers an even higher risk of stroke. However, the data suggest that we need to understand better how to optimize the adjunctive pharmacological therapy in elderly patients and in those with prior valvular disease, including patients with atrial fibrillation and ongoing anticoagulation therapy. We need more clinical trials to understand how best to combine anticoagulation and antiplatelet therapies for PCI in general and for patients with an indication for oral anticoagulation in particular. The strong association between haemorrhagic stroke and prior valvular disease and the use of warfarin but no association with the use of modern potent P2Y12 receptor inhibitors should question the use of warfarin in patients undergoing PCI. The effect of direct-acting oral anticoagulation agents, with a considerably lower risk for intracranial bleeding events, in conjunction with PCI also needs to be better understood.

Observational studies such as that of Kwon et al. increase our understanding of current praxis, triggers questions, and stimulates the performance of new randomized trials in a true virtuous circle of knowledge (Figure 1).

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* Corresponding author. Uppsala Clinical Research Center, Dag Hammarskjöldsväg 14B, Science Park, SE-751 85 Uppsala, Sweden. Tel: +46 18 611 4420, Fax: +46 18 51 55 70, Email: stefan.james@ucr.uu.se or stefan.james@akademiska.se

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References


