TRANSIENT WITH MYOCARDIAL INFARCTION CLINICAL-NEUROLOGICAL CHARACTERISTICS OF ISCHEMIC STROKE DEVELOPMENT

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Abstract : Transient ischemic attack (TIA) can convey a high imminent risk for the development of a major stroke and is therefore considered to be a medical emergency. Recent evidence indicates that TIA with imaging proof of brain infarction represents an extremely unstable condition with early risk of stroke that is as much as 20 times higher than the risk after TIA without tissue damage. The use of neuroimaging in TIA is therefore critical not only for diagnosis but also for accurate risk-stratification. In this article, we discuss recent advances in diagnostic imaging, categorizations, and risk stratification in TIA.

Keywords: Transient ischemic attack, definition, diffusion-weighted imaging, imaging, risk stratification, risk scores

Introduction

Acute ischemic stroke (AIS) is a rare but critical complication following acute myocardial infarction (AMI) [1,2,3]. Several clinical variables, including age, gender, ST-segment elevation myocardial infarction (STEMI), atrial fibrillation (AF), and specific interventional procedures have been reported as risk factors for acute stroke in AMI patients [1,4,5,6,7]. Among those factors, specific interventional procedures may be more important than unmodifiable factors such as age or gender, because physicians may have an opportunity to modify their interventional procedures to prevent AIS. Although earlier studies reported that

transfemoral intervention, thrombus aspiration, and mechanical support were associated with stroke in patients with percutaneous coronary intervention (PCI), interventional procedures associated with AIS in patients with STEMI have not been fully discussed [7,8,9]. The incidence of AIS or transient ischemic attack (TIA) is greater in STEMI cases than in non-ST segment elevation myocardial infarction (NSTEMI) cases [4,5]. Furthermore, emergent coronary angiography (CAG) and primary PCI are definitely necessary for patients with STEMI [10,11]. This study aimed to investigate the factors associated with new-onset AIS/TIA in patients with STEMI who required primary PCI.

Methods for Patient Evaluation

Over the last decade, substantial new diagnostic advances have occurred, including the widespread availability of MR angiography (MRA) and computed tomographic (CT) angiography (CTA), the recognition that diffusion MR frequently shows abnormalities in classic TIA patients, and the development and validation of risk stratification algorithms that identify TIA patients at higher and lower risk of early stroke. Accordingly, clinicians are in need of updated guidance regarding the definition, urgency, and evaluation of patients with TIA. Formal levels of evidence and classes of recommendations are used. Because there are few definitive clinical trials in this area, this document is a scientific statement rather than a guideline. The treatment of TIA was not addressed by this writing panel because it is already covered in the Stroke Council's guideline statements on treatment of acute cerebral ischemia and secondary prevention after ischemic stroke and TIA.[3] Statistical Analysis–Data were analyzed with the STATISTICA 4.0 software modules (StatSoft Inc). Group data are expressed as mean±SD for continuous variables and as rates for variables on a nominal scale. Differences between two means were assessed with the *t* test for unpaired data or the Mann-Whitney *U* test when appropriate. Differences between proportions were analyzed with the χ^2 test. Differences in stroke event rate associated with age and year of onset, respectively,

were assessed by linear regression. A difference in stroke incidence associated with year of onset was also assessed by linear regression. The null hypothesis was rejected for values of $P<.05$.

The risk of MI-related stroke associated with different clinical characteristics is given by OR with 95% CI for a matched case-control study.[11] Conditional multiple logistic regression (Stata 4.0, Stata Corp) was used to identify independent predictors of MI-related stroke. Variables associated with a risk for MI-related stroke in univariate analysis or considered to be of potential clinical interest were included in the model. Kaplan-Meier survival curves were calculated for patients with and without MI-related stroke and compared between groups with the log-rank test. The Cox proportional hazards model was used to identify predictors of death.

Discussion

Stroke after an acute MI is an infrequent but important clinical problem. The incidence of MI-related stroke has been estimated in several studies both before and after the introduction of aspirin and thrombolytics as standard therapy. In early studies examining the effect of warfarin in acute MI, stroke occurred in 2.3% to 3.8% of the untreated patients.[13141516] In observational studies from coronary care units in the 1970s and 1980s, the stroke event rate was 0.9% to 1.9%.[6171819] In the large thrombolysis trials, the event rate of stroke in the placebo groups was 0.8% to 1.1%.[202122] A possible decrease in the event rate of stroke after MI has been suggested but is difficult to substantiate because of divergences in patient inclusion, exclusion of high-risk patients, dissimilar diagnostic criteria, and varying follow-up times in different studies.[23] The present study was population based; it included a large number of unselected patients and covered a time period of 10 years. The same diagnostic criteria were used during the entire study period, and every recorded stroke was evaluated for a possible relationship to an MI. Our results

support a declining trend in the incidence and event rate of MI-related ischemic stroke. There is no declining trend in overall stroke incidence in the present population.[24]

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