



Kompetenznetz Schlaganfall



 Bundesministerium
für Bildung
und Forschung

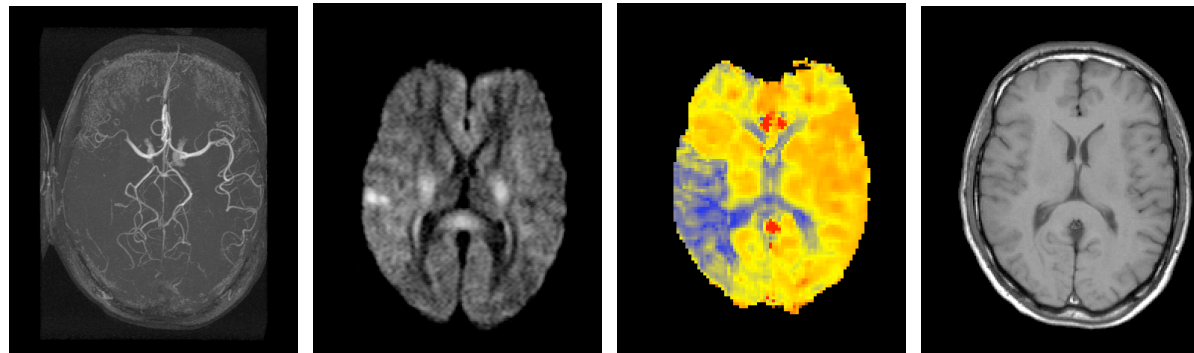
Was hat das Kompetenznetz Schlaganfall den Schlaganfallpatienten

`gebracht` ?

Was hat das Kompetenznetz Schlaganfall
den Schlaganfallpatienten
in der Akut-Therapie
'gebracht' ?

Ausdehnung des Lyse-Fensters auf 6 Stunden mittels Mismatch-Schlaganfall-MRT

Mismatch



Ausdehnung des Lyse-Fensters auf 6 Stunden mittels Mismatch-Schlaganfall-MRT



Röther et al.
Stroke 2002

Effect of Intravenous Thrombolysis on MRI Parameters and Functional Outcome in Acute Stroke <6 Hours

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Background and Purpose—The goals of this study were to examine MRI baseline characteristics of patients with acute ischemic stroke (AIS) and to study the influence of intravenous tissue plasminogen activator (tPA) on MR parameters and functional outcome using a multicenter approach.

Methods—In this open-label, nonrandomized study of AIS patients with suspected anterior circulation stroke, subjects received a multiparametric stroke MRI protocol (diffusion- and perfusion-weighted imaging and MR angiography) within 6 hours after symptom onset and on follow-up. Patients were treated either with tPA (thrombolysis group) or conservatively (no thrombolysis group). Functional outcome was assessed on day 90 (modified Rankin Score; mRS).

Results—We enrolled 139 AIS patients (no thrombolysis group, n=63; thrombolysis group, n=76). Patients treated with tPA were more severely affected (National Institutes of Health Stroke Scale score, 10 versus 13; $P=0.002$). Recanalization rates were higher in the thrombolysis group (Thrombolysis in Myocardial Infarction criteria 1 through 3 on day 1; 66.2% versus 32.7%; $P<0.001$). Proximal vessel occlusions resulted in larger infarct volumes and worse outcome ($P=0.02$). Thrombolysis was associated with a better outcome regardless of the time point of tPA treatment (≤ 3 hours or 3 to 6 hours) (univariate analysis: mRS ≤ 2 , $P=0.017$; mRS ≤ 1 , $P=0.023$). Age ($P=0.003$), thrombolytic therapy at 0 to 6 hours ($P=0.01$), recanalization ($P=0.016$), lesion volume on day 7 ($P=0.001$), and initial National Institutes of Health Stroke Scale score ($P=0.001$) affected functional outcome (mRS on day 90) positively (multivariate analysis). The time point of tPA therapy affected the recanalization rate ($P=0.024$) but not final infarct volume.

Conclusions—In this pilot study, tPA therapy had a beneficial effect on vessel recanalization and functional outcome. Multiparametric MRI delineates tissue at risk of infarction in AIS patients, which may be helpful for the selection of patients for tPA therapy. tPA therapy appeared safe and effective beyond a 3-hour time window. This study delivers the rationale for a randomized, MR-based tPA trial. (*Stroke*. 2002;33:2438-2445.)

Key Words: diffusion ■ magnetic resonance imaging ■ perfusion ■ stroke ■ thrombolytic therapy

Verbesserung der Lyse durch Identifikation von strukturellen Indikatoren für effiziente Schlaganfall-Lyse-Therapie



Heuschmann et al.
JAMA 2004



Predictors of In-Hospital Mortality in Patients With Acute Ischemic Stroke Treated With Thrombolytic Therapy

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INTRAVENOUS TREATMENT WITH tissue plasminogen activator (tPA) is currently the only approved treatment for patients with acute ischemic stroke and is recommended in the guidelines of several national and international stroke associations.¹ However, in multicenter studies, only 1.6%² to 2.7%³ of patients with ischemic stroke treated in community hospitals and 4.1%⁴ to 6.3%⁵ treated in academic hospitals or specialized stroke centers received this treatment. One major cause for the low treatment rates is that a large proportion of patients are admitted more than 3 hours after symptom onset,⁶ the time window for which application of tPA treatment is cur-

rently approved. But even among patients admitted within 3 hours after stroke onset, treatment rates are only

moderate, ranging from 10.4%⁷ to 18.8%.⁷ In addition to a number of contraindications clearly listed in the drug

Context Data are limited regarding the risks and benefits of thrombolytic therapy for acute ischemic stroke outside of clinical trials.

Objective To investigate predictors of in-hospital mortality in patients with ischemic stroke treated with intravenous tissue plasminogen activator (tPA) within a pooled analysis of large German stroke registers.

Design and Setting Prospective, observational cohort study conducted at 225 community and academic hospitals throughout Germany cooperating within the German Stroke Registers Study Group.

Patients A total of 1658 patients with acute ischemic stroke who were admitted to study hospitals between 2000 and 2002 and were treated with tPA.

Main Outcome Measure In-hospital mortality.

Results One hundred sixty-six patients (10%) who received tPA died during hospitalization, with 67.5% of these deaths occurring within 7 days. Factors predicting in-hospital death after tPA use were older age (for each 10-year increment in age, adjusted odds ratio [OR], 1.6; 95% confidence interval [CI], 1.3-1.9) and altered level of consciousness (adjusted OR, 3.4; 95% CI, 2.4-4.7). The overall rate of symptomatic intracranial hemorrhage was 7.1% and increased with age. One or more serious complications was observed in 27.2% of all patients and in 83.9% of patients who died after tPA treatment. An inverse relation between the number of patients treated with tPA in the respective hospital and the risk of in-hospital death was observed (adjusted OR, 0.97; 95% CI, 0.96-0.99 for each additional patient treated with tPA per year).

Conclusion In patients with ischemic stroke who are treated with tPA, disturbances of consciousness and increasing age are associated with increased in-hospital mortality.

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Bessere flächendeckende Durchdringung der Lyse durch Telemedizinisch-gesteuerte Lyse („Tele-Lyse“)



Bessere flächendeckende Durchdringung der Lyse durch Telemedizinisch-gesteuerte Lyse („Tele-Lyse“)



Audebert et al.
Lancet Neurol 2006

Effects of the implementation of a telemedical stroke network: the Telemedic Pilot Project for Integrative Stroke Care (TEMPiS) in Bavaria, Germany

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Summary

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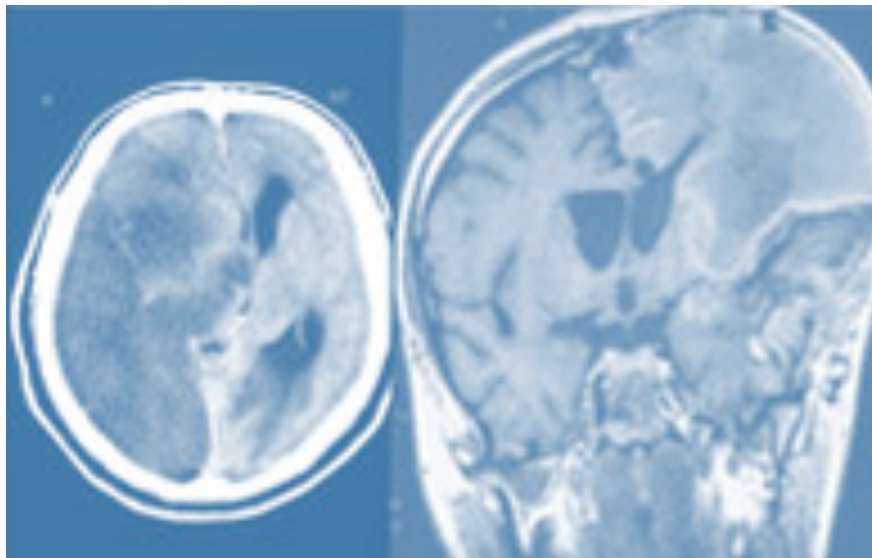
Background Telemedical networks are a new approach to improve stroke care in community settings. We aimed to assess the effects of a stroke network with telemedical support in Germany on quality of care, according to acute processes and long-term outcome.

Methods Five community hospitals without pre-existing specialised stroke care were included in a network with telemedical support by two academic hospitals. In a non-randomised, open intervention study, five community hospitals without specialised stroke care served as the control group, matched individually to the network hospitals by predefined characteristics. Stroke patients admitted consecutively to one of the participating hospitals between July 7, 2003, and March 31, 2005, were included in the study. Patients in network and control hospitals were assessed in the same manner and were followed up for vital status, living situation, and disability at 3 months. Poor outcome was defined by death, institutional care, or disability (Barthel index <60 or modified Rankin scale >3). Predefined indicators for quality of acute stroke care were achieved.

Findings A total of 5696 patients with a sudden, non-convulsive loss of neurological function who were diagnosed with having suspected stroke were admitted to the ten hospitals participating in the study. After exclusion, 3122 were included in the final analysis, of whom 1971 (63%) were treated in the network hospitals. All indicators related to quality of acute stroke care were more commonly met in the network than in the control hospitals. After 3 months, 44% of patients treated in network hospitals versus 54% treated in control hospitals had a poor outcome ($p<0.0001$). In multivariate regression analysis, treatment in network hospitals independently reduced the probability of a poor outcome (odds ratio 0.62, 95% CI 0.52–0.74; $p<0.0001$).

Interpretation Telemedical networks with academic stroke centres offer new and innovative approaches to improve acute stroke care at community level for stroke patients living in non-urban areas.

Reduktion von Letalität und verbesserte Lebensqualität durch Craniotomie nach Malignem Mediainfarkt



DESTINY
(**DE**compressive **S**urgery
for the **T**reatment of
Malignant
INfarction of the
Middle Cerebral Arter**Y**)

Reduktion von Letalität und verbesserte Lebensqualität durch Craniotomie nach Malignem Mediainfarkt



Jüttler et al.
Stroke 2007



Decompressive Surgery for the Treatment of Malignant Infarction of the Middle Cerebral Artery (DESTINY)

A Randomized, Controlled Trial

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for the DESTINY Study Group*

Background and Purpose—Decompressive surgery (hemicraniectomy) for life-threatening massive cerebral infarction represents a controversial issue in neurocritical care medicine. We report here the 30-day mortality and 6- and 12-month functional outcomes from the DESTINY trial.

Methods—DESTINY (ISRCTN01258591) is a prospective, multicenter, randomized, controlled, clinical trial based on a sequential design that used mortality after 30 days as the first end point. When this end point was reached, patient enrollment was interrupted as per protocol until recalculation of the projected sample size was performed on the basis of the 6-month outcome (primary end point=modified Rankin Scale score, dichotomized to 0 to 3 versus 4 to 6). All analyses were based on intention to treat.

Results—A statistically significant reduction in mortality was reached after 32 patients had been included: 15 of 17 (88%) patients randomized to hemicraniectomy versus 7 of 15 (47%) patients randomized to conservative therapy survived after 30 days ($P=0.02$). After 6 and 12 months, 47% of patients in the surgical arm versus 27% of patients in the conservative treatment arm had a modified Rankin Scale score of 0 to 3 ($P=0.23$).

Conclusions—DESTINY showed that hemicraniectomy reduces mortality in large hemispheric stroke. With 32 patients included, the primary end point failed to demonstrate statistical superiority of hemicraniectomy, and the projected sample size was calculated to 188 patients. Despite this failure to meet the primary end point, the steering committee decided to terminate the trial in light of the results of the joint analysis of the 3 European hemicraniectomy trials. (*Stroke*. 2007;38:2518-2525.)

Key Words: decompressive surgery ■ malignant middle cerebral artery infarction ■ randomized trials

Was hat das Kompetenznetz Schlaganfall
den Schlaganfallpatienten
in der Prophylaxe
'gebracht' ?

Indikations-Stellung / Wirksamkeit von Karotis-STENT versus Endarterektomie in der Schlaganfall-Prophylaxe



Hacke et al.
Lancet 2006

30 day results from the SPACE trial of stent-protected angioplasty versus carotid endarterectomy in symptomatic patients: a randomised non-inferiority trial



The SPACE Collaborative Group*

Summary

Background Carotid endarterectomy is effective in stroke prevention for patients with severe symptomatic carotid-artery stenosis, and carotid-artery stenting has been widely used as alternative treatment. Since equivalence or superiority has not been convincingly shown for either treatment, we aimed to compare the two.

Methods 1200 patients with symptomatic carotid-artery stenosis were randomly assigned within 180 days of transient ischaemic attack or moderate stroke (modified Rankin scale score of ≤ 3) carotid-artery stenting (n=605) or carotid endarterectomy (n=595). The primary endpoint of this hospital-based study was ipsilateral ischaemic stroke or death from time of randomisation to 30 days after the procedure. The non-inferiority margin was defined as less than 2.5% on the basis of an expected event rate of 5%. Analyses were on an intention-to-treat basis. This trial is registered at Current Controlled Trials with the international standard randomised controlled trial number ISRCTN57874028.

Findings 1183 patients were included in the analysis. The rate of death or ipsilateral ischaemic stroke from randomisation to 30 days after the procedure was 6.84% with carotid-artery stenting and 6.34% with carotid endarterectomy (absolute difference 0.51%, 90% CI -1.89% to 2.91%). The one-sided p value for non-inferiority is 0.09.

Interpretation SPACE failed to prove non-inferiority of carotid-artery stenting compared with carotid endarterectomy for the periprocedural complication rate. The results of this trial do not justify the widespread use in the short-term of carotid-artery stenting for treatment of carotid-artery stenoses. Results at 6–24 months are awaited.

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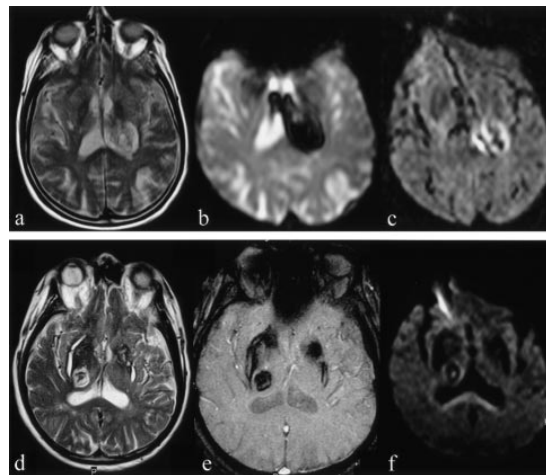
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page 1238

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Was hat das Kompetenznetz Schlaganfall
den Schlaganfallpatienten
in der Diagnostik
'gebracht' ?

Validierung des Schlaganfall-MRT für die Blutungs-Diagnostik



Validierung des Schlaganfall-MRT für die Blutungs-Diagnostik



Fiebach et al.
Stroke 2004

Stroke Magnetic Resonance Imaging Is Accurate in Hyperacute Intracerebral Hemorrhage

A Multicenter Study on the Validity of Stroke Imaging

Jochen B. Fiebach, MD; Peter D. Schellinger, MD; Achim Gass, MD; Thomas Kucinski, MD;
Mario Siebler, MD; Arno Villringer, MD; Peter Ölkens, MD; Jochen G. Hirsch, PhD;
Sabine Heiland, PhD; Philipp Wilde; Olav Jansen, MD; Joachim Röther, MD; Werner Hacke, MD;
Klaus Sartor, MD; for the Kompetenznetzwerk Schlaganfall B5

Was hat das Kompetenznetz Schlaganfall
den Schlaganfallpatienten
nach dem Schlaganfall in der Rehabilitation
'gebracht' ?

Etablierung einer neuen Therapie von Arm-Paresen und Validierung In Multicenter-Studie



Platz et al..
Clinical Reh
2005

Clinical Rehabilitation 2005; **19**: 714–724

Impairment-oriented training or Bobath therapy
for severe arm paresis after stroke: a single-blind,
multicentre randomized controlled trial

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Was hat das Kompetenznetz Schlaganfall
den Schlaganfallpatienten
für Public Health Aspekte der Versorgung
'gebracht' ?

Datenbank (80 000 Pat / Jahr) und darauf basierend einheitliche und validierte Qualitäts-Indikatoren



Heuschmann et al.
Stroke 2006



Development and Implementation of Evidence-Based Indicators for Measuring Quality of Acute Stroke Care The Quality Indicator Board of the German Stroke Registers Study Group (ADSR)

Peter U. Heuschmann, MD, MPH; Marcel K. Biegler, MD; Otto Busse, MD; Susanne Elsner, MD;
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Peter L. Kolominisky-Rabas, MD; Klaus Kraywinkel, MD, MSc; Klaus Lowitzsch, MD;
Bjoern Misselwitz, MD, MPH; Darius G. Nabavi, MD; Kirsten Otten, MD, MPH; Ludger Pientka, MD;
Gerhard M. von Reutern, MD; Erich Bernd Ringelstein, MD; Dirk Sander, MD;
Markus Wagner, PhD; Klaus Berger, MD, MPH

Wissen der Bevölkerung um Risikofaktoren, Optimierte Planung von Aufklärung



**Müller-Nordhorn
Stroke 2006**

Knowledge About Risk Factors for Stroke A Population-Based Survey With 28 090 Participants

Jacqueline Müller-Nordhorn, MD; Christian H. Nolte, MD; Karin Rossnagel, PhD;
Gerhard J. Jungehülsing, MD; Andreas Reich; Stephanie Roll, MSc;
Arno Villringer, MD; Stefan N. Willich, MD

Klare und prospektiv validierte Zahlen zu „Life-Time-Kosten“ eines Schlaganfalls



Kolominsky-Rabas
Stroke 2006

**Lifetime Cost of Ischemic Stroke in Germany: Results and
National Projections From a Population-Based Stroke Registry
The Erlangen Stroke Project**

Peter L. Kolominsky-Rabas, MD, PhD; Peter U. Heuschmann, MD, PhD; Daniela Marschall, MSc;
Martin Emmert; Nikoline Baltzer, Bnurs; Bernhard Neundörfer, MD, PhD; Oliver Schöffski, PhD;
Karl J. Krobot, MD, PhD; for the CompetenceNet Stroke

Was hat das Kompetenznetz Schlaganfall
strukturell in Deutschland bewirkt ?

Was hat das Kompetenznetz Schlaganfall

strukturell in Deutschland (mit) bewirkt ?

- Datenbank (ADSR) mit > 80.000 Patienten / Jahr
- Ausgründung der Deutschen Schlaganfall-Gesellschaft (DSG)
- Leitung des europäischen Netzwerk ARISE
- European Stroke Net
- Gründung eines IFB in Berlin
- Persistenz der KN-Organisation / PR / Symposien / Klinische Studien

Was wird das Kompetenznetz Schlaganfall
den Schlaganfallpatienten
in Zukunft 'bringen' ?

Was wird das Kompetenznetz Schlaganfall
den Schlaganfallpatienten
in Zukunft 'bringen' ?

- Verbesserung der Primär- Prophylaxe des Schlaganfalls:
Analyse in großen prospektiven Kohortenstudien
Life-style, medikamentöse und kognitive Prophylaxe
- Restitution nach Schlaganfall
Stimulations-Therapie
Regenerative Therapie
Kognitive Therapie

Danke

Geschäftsführerin:

PR:

Wiss. Koordinatoren:

Sprecher

Meike Sieveking

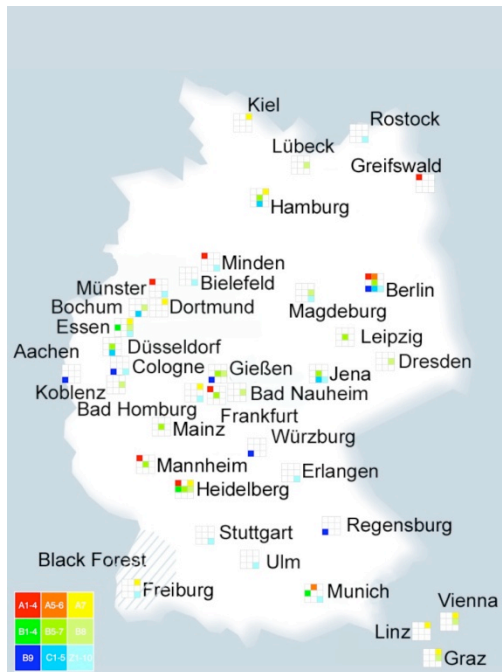
Liane Clevert, Ulrike Lachmann

Telse Kocak

Dr. Jan Jungehülsing,

Dr. Christian Nolte

Prof. Dr. Karl Einhäupl



Prof. Dr. P. Lange (BMBF)

Dr. H.J. Schnorr (DLR)

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Kompetenznetz Schlaganfall



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