ICCA STROKE 2019

WIST

Peri-interventional management of stroke

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DISCLOSURE STATEMENT OF FINANCIAL INTEREST

Within the past 12 months, I have had a financial interest/arrangement or affiliation with the organization(s) listed below

AFFILIATION/FINANCIAL RELATIONSHIP	COMPANY
• Ownership/Founder • Intellectual Property Rights	• Intelligent ambulance solutions / INTAS GmbH

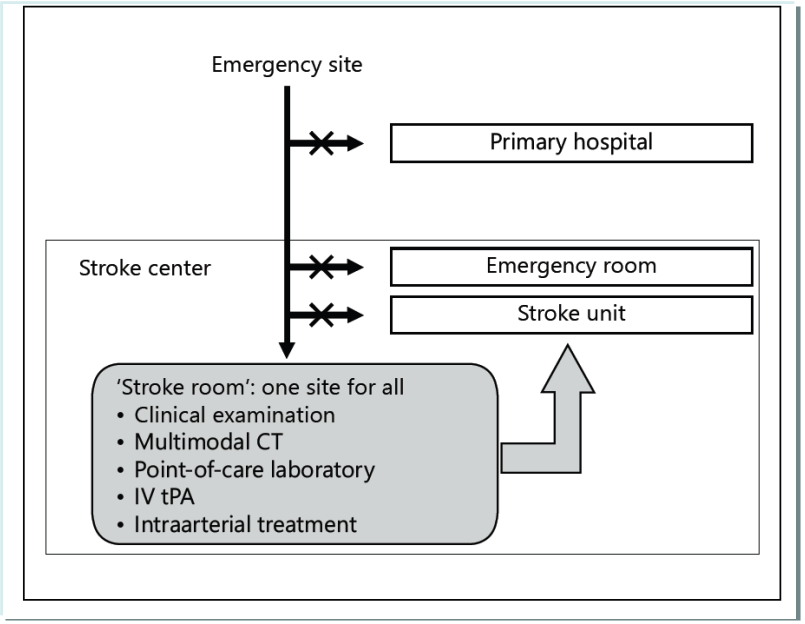
Streamlining stroke management

- Prenotification
- Team awaits patient, prepares arrival
- At the CT:
  - *Handover*
  - *Neurological examination*
  - *POC laboratory*
  - *IVT*
  - *IAT next room*
- Medication ready
- No unnecessary measures

„stroke room“ protocol

Ragoschke-Schumm et al., CVD 2015

Stroke Room concept: all at one site



Ragoschke-Schumm et al., CVD 2015

Less is more:

Avoiding unnecessary procedures !

Multimodal MRI: for selected patients only

- informs about tissue at risk („tissue clock“)

  - Albers GW, Thijs VN et al, (DEFUSE). Ann Neurol 2006
  - Davis SM, et al., (EPITHET). Lancet Neurol 2008

- however, causes delays

  - Sheth KN et al. J Neurointervent Surg 2013

Fassbender K et al., Lancet Neurology 2013

General anaesthesia?

- cause delay
  - Menon MZ et al., Stroke 2014
- may even cause harm
  - Campbell B et al., Lancet Neurology 2018
- randomized studies needed
  - AHA Guidelines

IV tPA ?

- Current guidelines: “Patients should receive intravenous r-tPA even if IAT is being considered.”

Powers et al., Stroke 2015 AHA Guidelines addendum 2015

- However, poor evidence → randomized trials needed !

Management of procedural complications

(up to 15% in randomized trials)

- access-site related
  - vessel/nerve injury
  - access-site hematoma
  - groin infection
- device-related
  - vasospasm
  - arterial perforation, dissection, pseudoaneurysm
  - device detachment / misplacement
  - Intracerebral hemorrhage
- anaesthesia - / contrast agent - related

Balami JS, Int J Stroke 2018

Procedural complications

- are clinically relevant
- increase length of stay
- increase costs
- delay commencement of rehabilitation

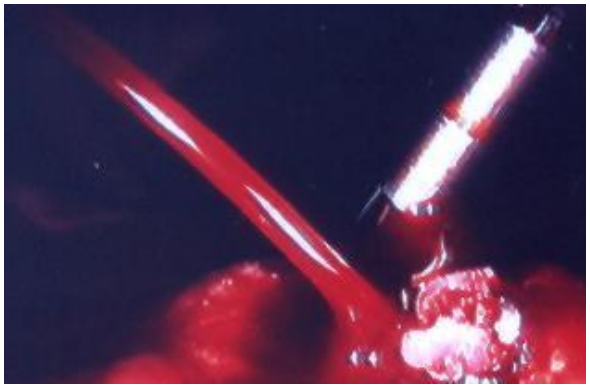
Complication management

Stroke Unit

- highly specialized
- 24/7 service
- team approach
- monitoring of physiological parameter
- **management of complications**
- interdiscipliary cooperation *(neurologists, neuro-radiologists, neurosurgeons, cardiologists, anesthesiologists, vascular surgeons…)*

Access site complications

- 1-5% of IAT patients require blood transfusion
- 1% of IAT patients require surgery
- Risk factor: elevated age



De Carvalho et al., 2012; O'Neill, 2006; Meis et al., 2009

Contrast-induced nephropathy

- Overall risk: 5%
- Long term risk for dialysis: < 1%
- Beneficial effects for
  - *Saline infusion*
  - *Isotonic bicarbonate infusion* *(150 ml bicarbonate in 850 ml G5% or sterile water)*
  - *Acetylcysteine ?*

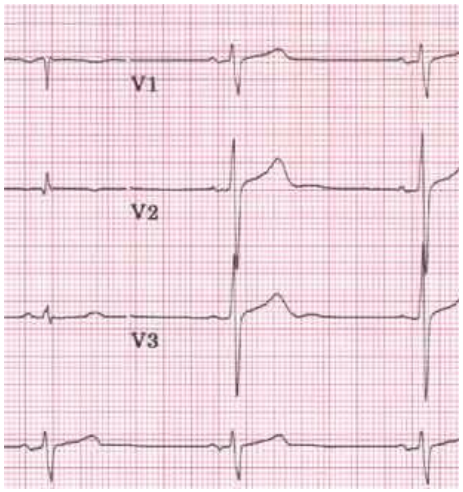
Panu et al., JAMA, 2006;
Barrett and Parfrey, N Engl J Med, 2006

Cardiovascular complications

- Myocardial infarction
- Cardiac arrhythmia
- Hypertension/Hypotension:

  RR >180 mm Hg or <100 mmHg

  → increased risk of poor outcome by 23%



Kocan, 1999

Johnston and Mayer, 2003

Castillo et al., 2004

Hyperglycaemia

- Poorer outcome
- Intervention, if glucose>180 mg%

Table 1.

Univariate Analyses of Sample in Terms of Survival at 30 Days

	Alive at 30 Days (n=130)	Dead Within 30 Days (n=53)	OR	*P*
Male, %	45	36	0.7	.31
Mean age, y (range)	75 (45–94)	81 (50–95)	...	.0008
Age >75 years, %	56	77	2.7	.01
Glycemia, mmol/L (range)	6.7 (3.3–25.2)	9.3 (5.3–23.4)	...	.0001
Glycemia >6.7 mmol/L, %	34	77	6.6	.00001
Drowsy or comatose, %	10	62	14.5	.00001
Febrile in first 7 days, %	32	70	5.0	.00001
Median MTEMP, °C	37.6	38.6	...	.0002
Onset of fever within 2 days, %	58	70	4.2	.0001

ESO guidelines
Azzimondi et al., 1995

Hyperthermia

- Increase of ICP
- Poorer outcome: (increase of relative risk by 2.2/ ° ° C:
- Interferevention, if >37.5° C (paracetamol)

ESO guidelines

Greer et al., 2008
Kammersgaard et al., 2002
Hajat et al., 2000

Management of brain swelling

CPP (cerebral perfusion pressure) aim: 65 - 90 mmHg
(CPP = MAP – ICP)

- Osmotherapeutics: increase CPP and O_2 supply
- Deep sedation
- Decompressive craniectomy
- Hypothermia ?

Vahedi et al., 2009; Inao et al., 1990; Muizelaar et al., 1983

Thank you !