

*Thrombembolic risk factors
after cardioversion for atrial fibrillation*

*Emboic events in patients with atrial
fibrillation and effective anticoagulation:
value of transesophageal echocardiography
to guide direct-current cardioversion.*

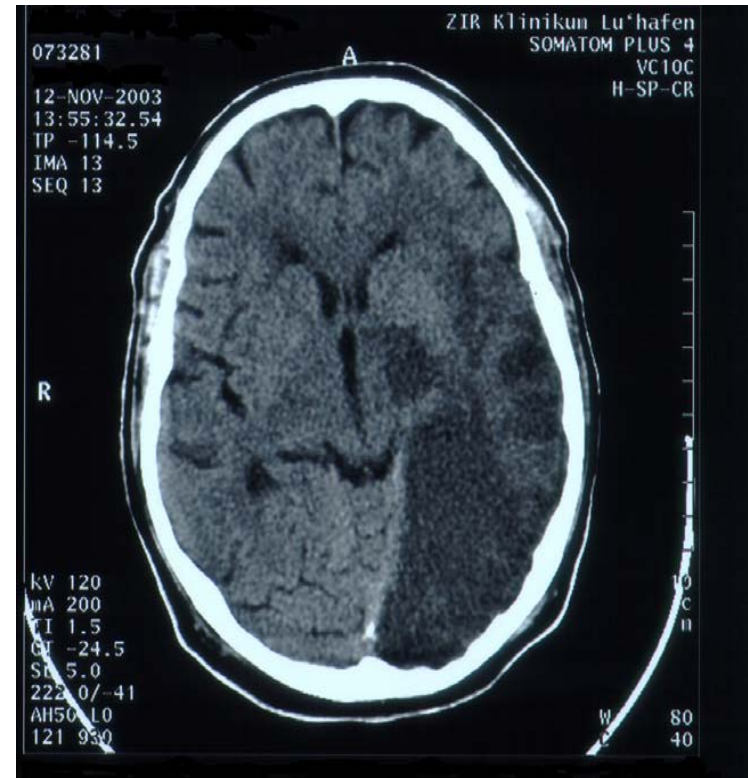
R Zahn, K Seidl

Nürnberg, Ludwigshafen

Germany

Stroke after CV of AF

- **without OAC 5-7%**
- **with OAC 1-2%**



Bjerkelund CJ, Orning OM Am J Cardiol,1969 , 23: 208-216

Singer et al: Antithrombotic therapy in AF; Seventh ACCP Conference on antithrombotic and thrombolytic therapy; Chest 2004; 126: 429S – 456S

Agenda

- **Current guidelines for CV of AFib**
- **TEE in anticoagulated pts with AF**
vs
pts without prior anticoagulation
- **TEE of value in anticoagulated pts with AF ?**
- **TEE as risk-stratification for stroke during FU**

Elective Cardioversion of AFib

AFib > 48 h or unknown duration

Conventional approach

At least 3 weeks of OAC with INR 2.5



4 weeks of OAC with INR 2.5

Elective Cardioversion of AFib

AFib < 48 h

Conventional approach

OAC not needed *before* CV



but 4 weeks of OAC with INR 2.5

Elective Cardioversion of AFib

AFib > 48 h or unknown duration

TEE-guided cardioversion

TEE

no thrombus



4 weeks of OAC with INR 2.5

thrombus

3 weeks of OAC with INR 2.5



4 weeks of OAC with INR 2.5

Advantage of TEE guided cardioversion

- *Shortens the duration of anticoagulation for at least 4 weeks.*
- *Increases the proportion of patients*
 - *getting cardioversion at all*
 - *getting successful cardioversion.*
- *Is more practical, because the job is finished during the initial hospital stay (no need for readmission).*

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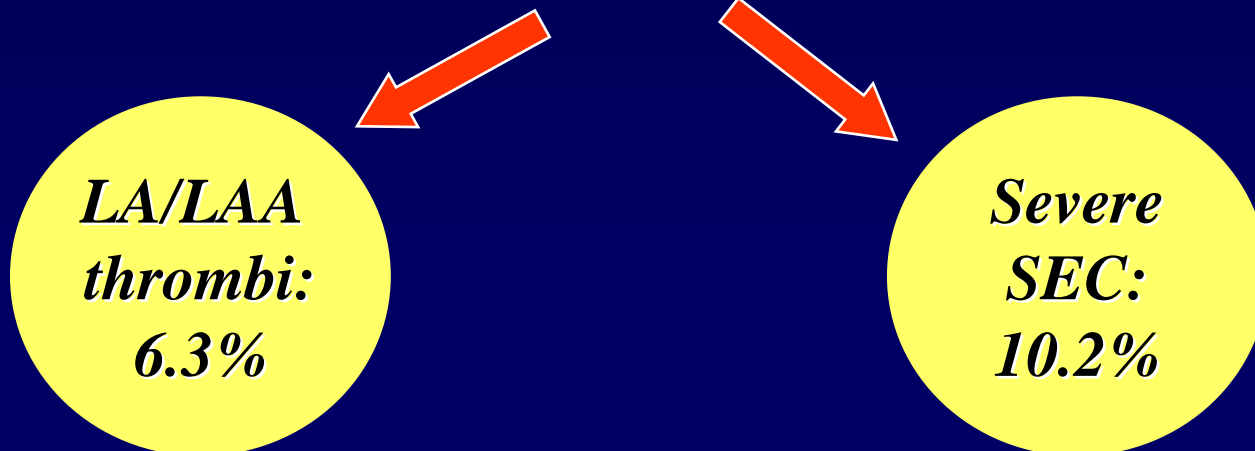
Transesophageal Echocardiography

- has been proposed as a method of screening pts **for surrogate endpoints for stroke:**
 - LA-thrombi before CV
 - spontaneous echo contrast
 - low left atrial appendage peak flow velocity (< 20 mm/s)
-
- especially in pts without long-term OAC

Prevalence of LA/LAA thrombi

757 consecutive pts admitted for cardioversion

Hypertension	21%
MVD	11%
DCM	10%
PVD	9%
CAD	7%
Lone AFib	18%



Prevalence of LA/LAA thrombi

757 consecutive pts admitted for cardioversion

Effective AC

64.2%

Short AC

18.8%

Ineffective AC

6.7%

AC < 3w

10.3%

LA/LAA thrombi

6.6%

5.6%

2%

9%

Predictors of LA/LAA thrombi

757 consecutive pts admitted for cardioversion

*LA/LAA
thrombi:
6.3%*

- Older age
- MV prosthesis
- Low L-EF
- Severe SEC
- Low LAA velocity

Ischemic events during cardioversion

757 consecutive pts admitted for cardioversion

Effective AC

64.2%

Short AC

18.8%

Ineffective AC

6.7%

AC < 3w

10.3%

6.3% thrombi/severe SEC

cardioversion postponed

No thrombi



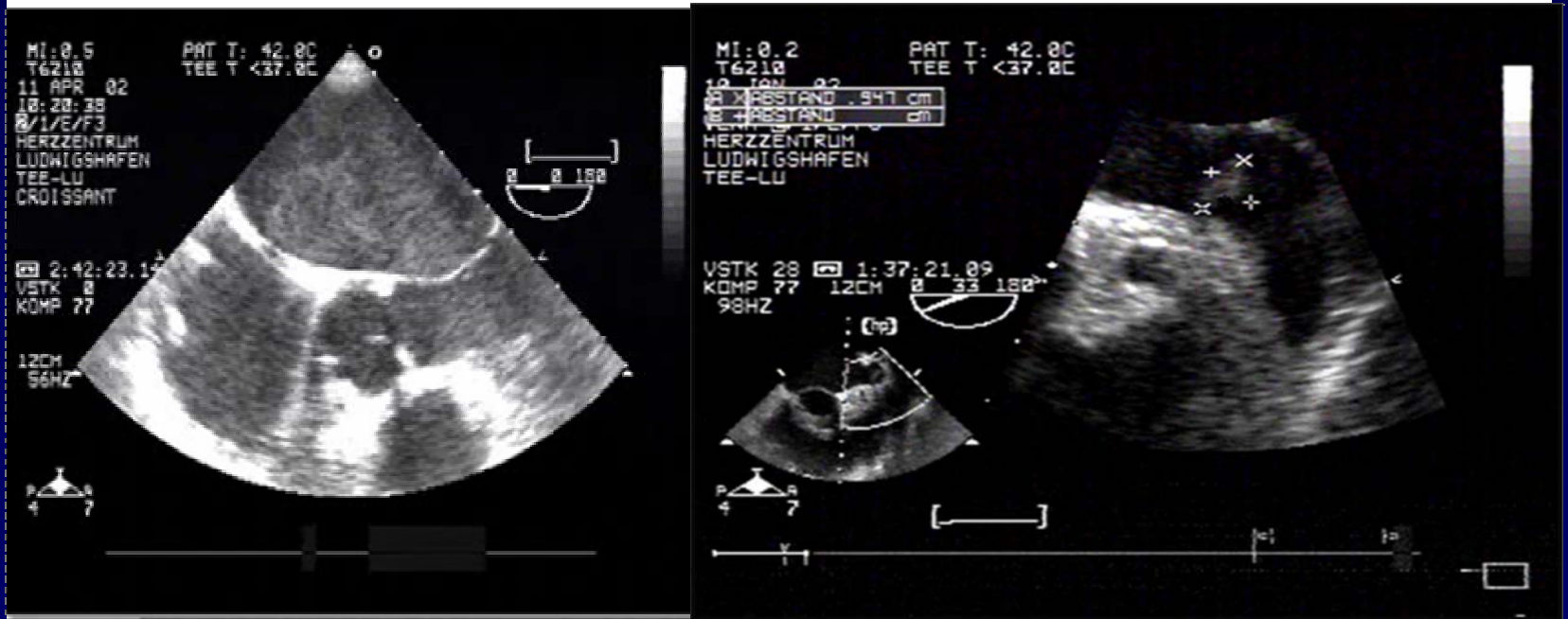
Stroke: 0%, 1 TIA

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Unsolved Issues

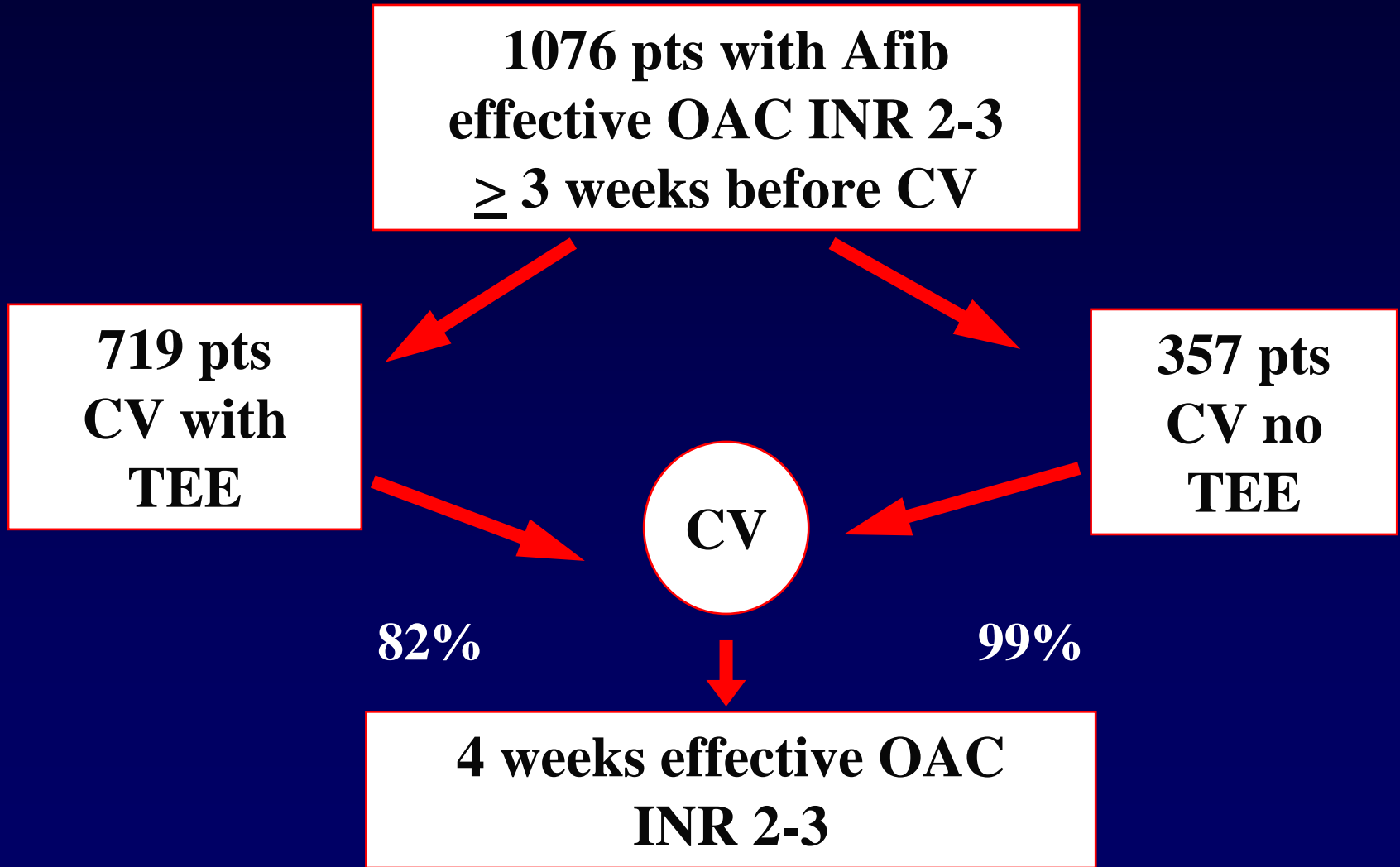
- Value of TEE in anticoagulated pts ?
- Serial TEE studies in pts with LA-thrombi after OAC of > 4 weeks ?
- Value of spontaneous echo contrast (sludge) ?





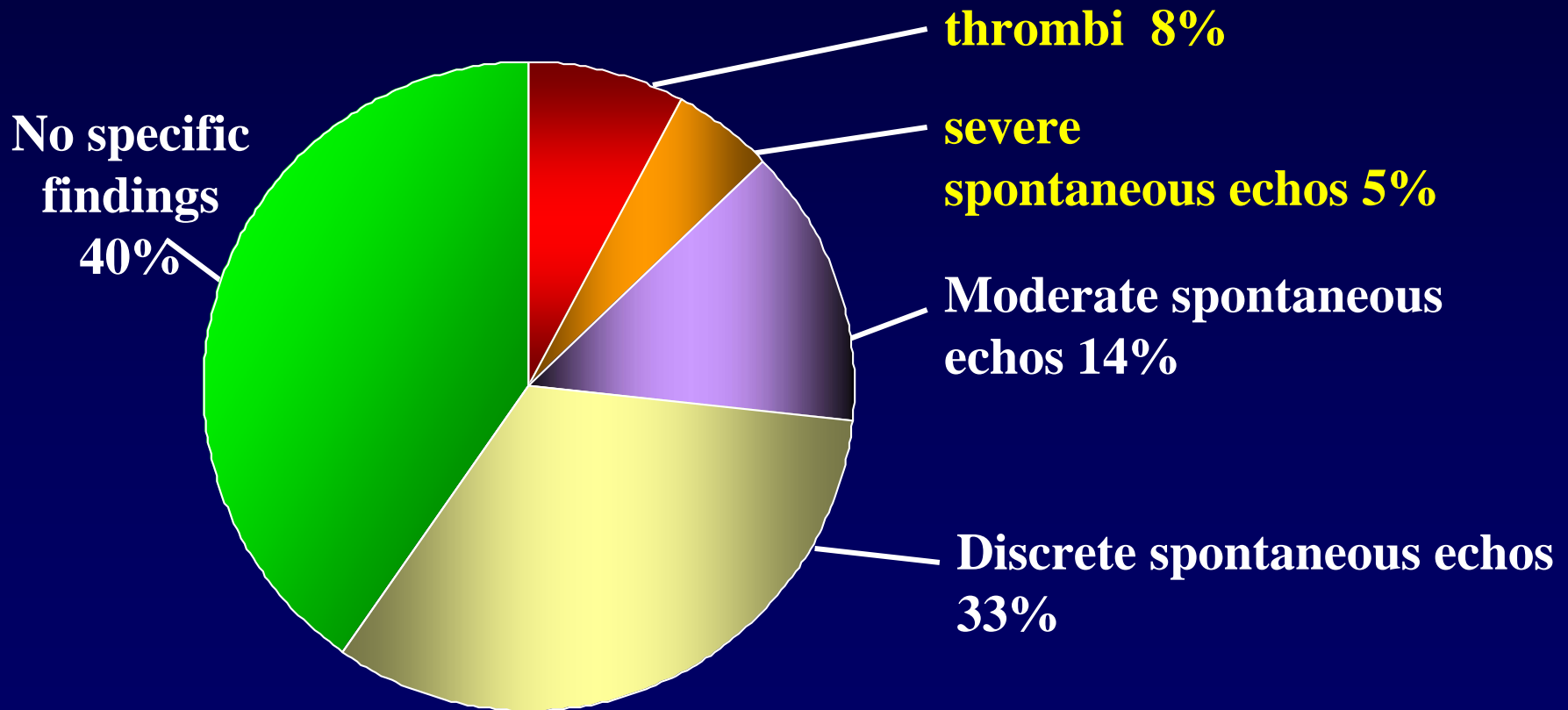
Ludwigshafen Cardioversion Study

TEE + effective anticoagulation



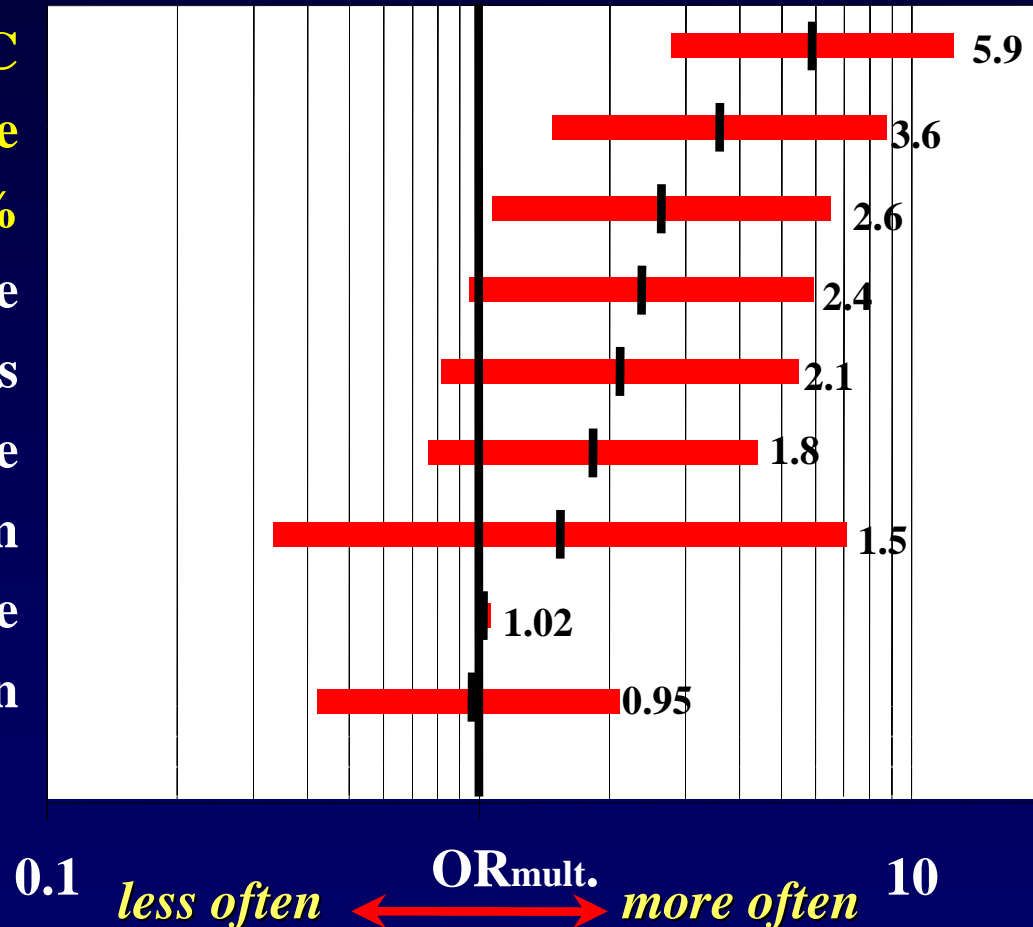
Thromboembolic - Risk

TEE – results by 719 pts mit AF and effective anticoagulation



Risk Factors for Thrombi

- ≥ moderate SEC**
- history of TIA / stroke**
- LV-EF < 40%**
- male**
- diabetes**
- org. heart disease**
- LA-diameter > 40mm**
- age**
- hypertension**

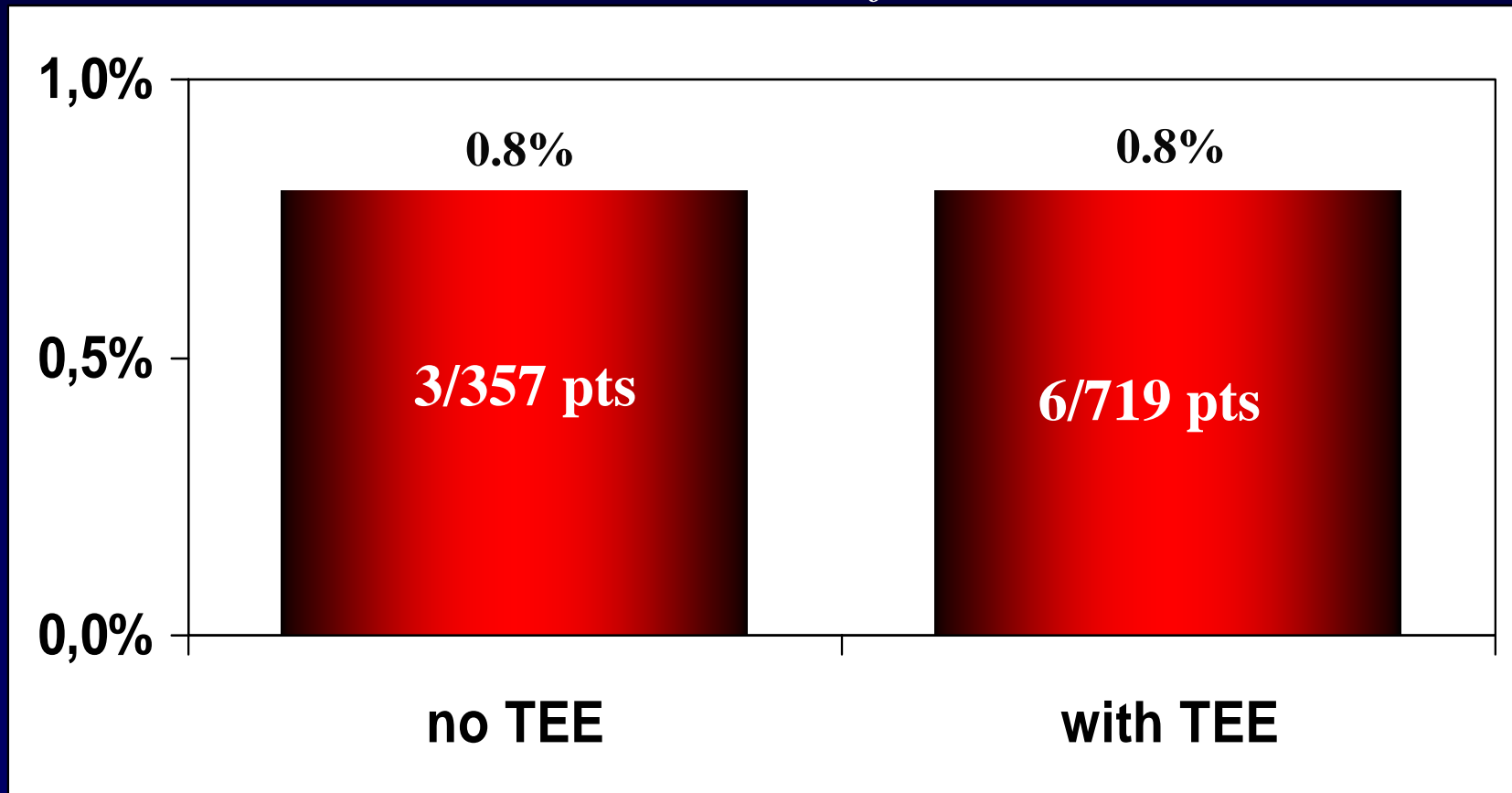




Ludwigshafen Cardioversion Study

effective anticoagulation

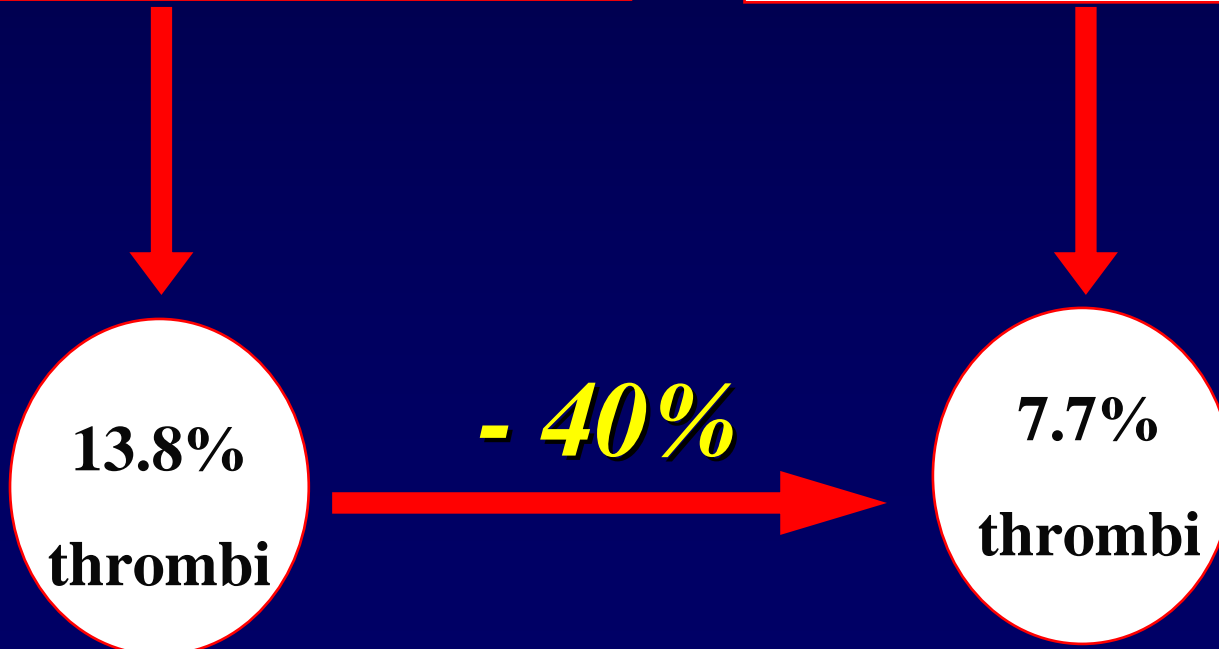
thromboembolic complications
≤ 4 weeks after CV



Prevalence of LA Thrombi

ACUTE study
TEE w/o long term
anticoagulation
619 pts

Ludwigshafen
LOCS
TEE with anticoagulation
719 pts



Stroke

ACUTE vs LOCS

ACUTE study

1222 pts

CV

TEE-CV

**0.5 %
Stroke**

**0.8 %
Stroke**

Short-term AC

Klein et al., N Engl J Med 2001, 344:1411-20

LOCS

1079 pts

CV

TEE-CV

**0.8 %
Stroke**

**0.8 %
stroke**

OAC before CV

Seidl et al., J Am Coll Cardiol 2002, 39:1436-42

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Ludwigshafen Cardioversion Study

serial TEE studies in pts with LAA-thrombi

**LA thrombus
n = 43 pts**

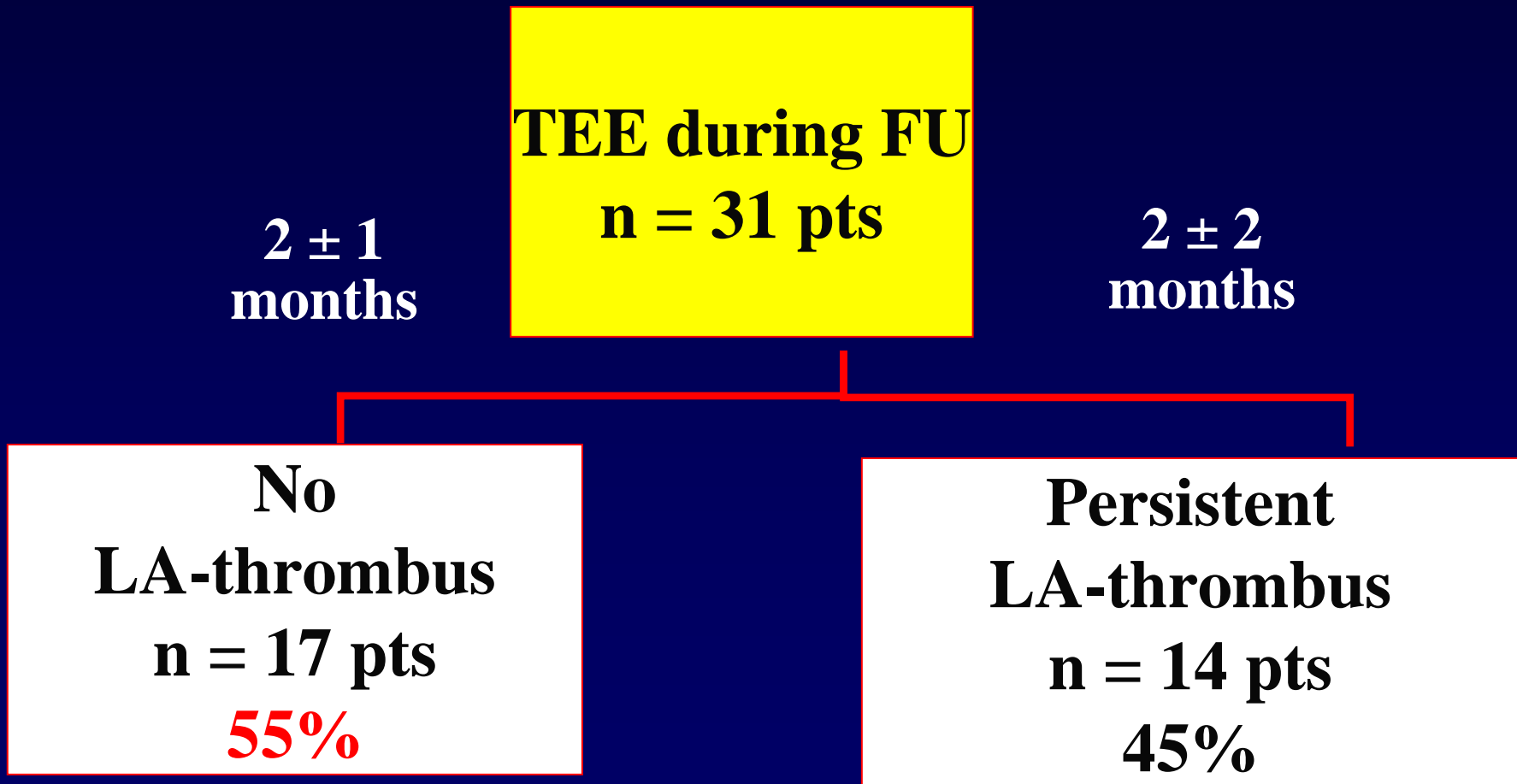
**No TEE during FU
n = 12 pts**

**TEE during FU
n = 31 pts**



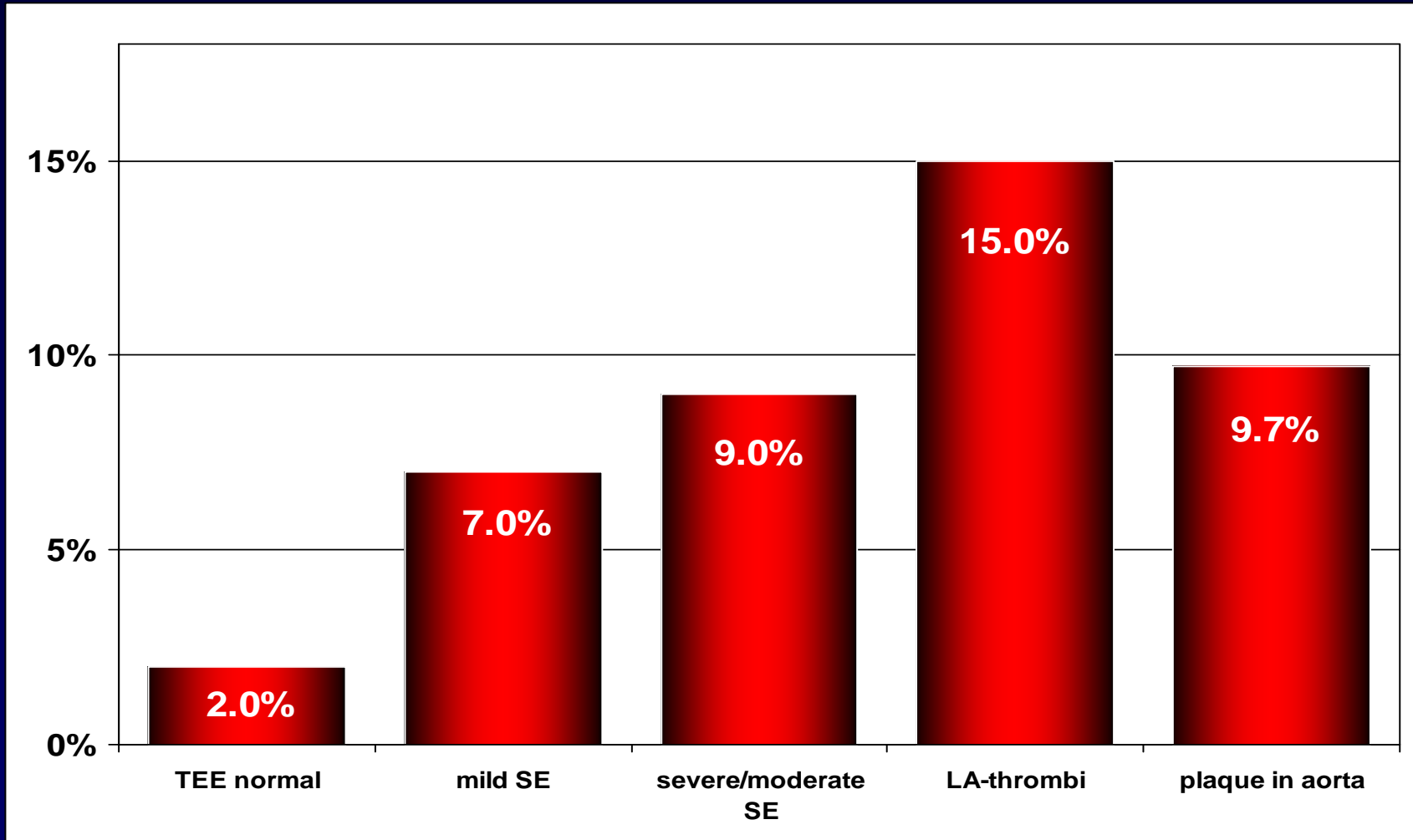
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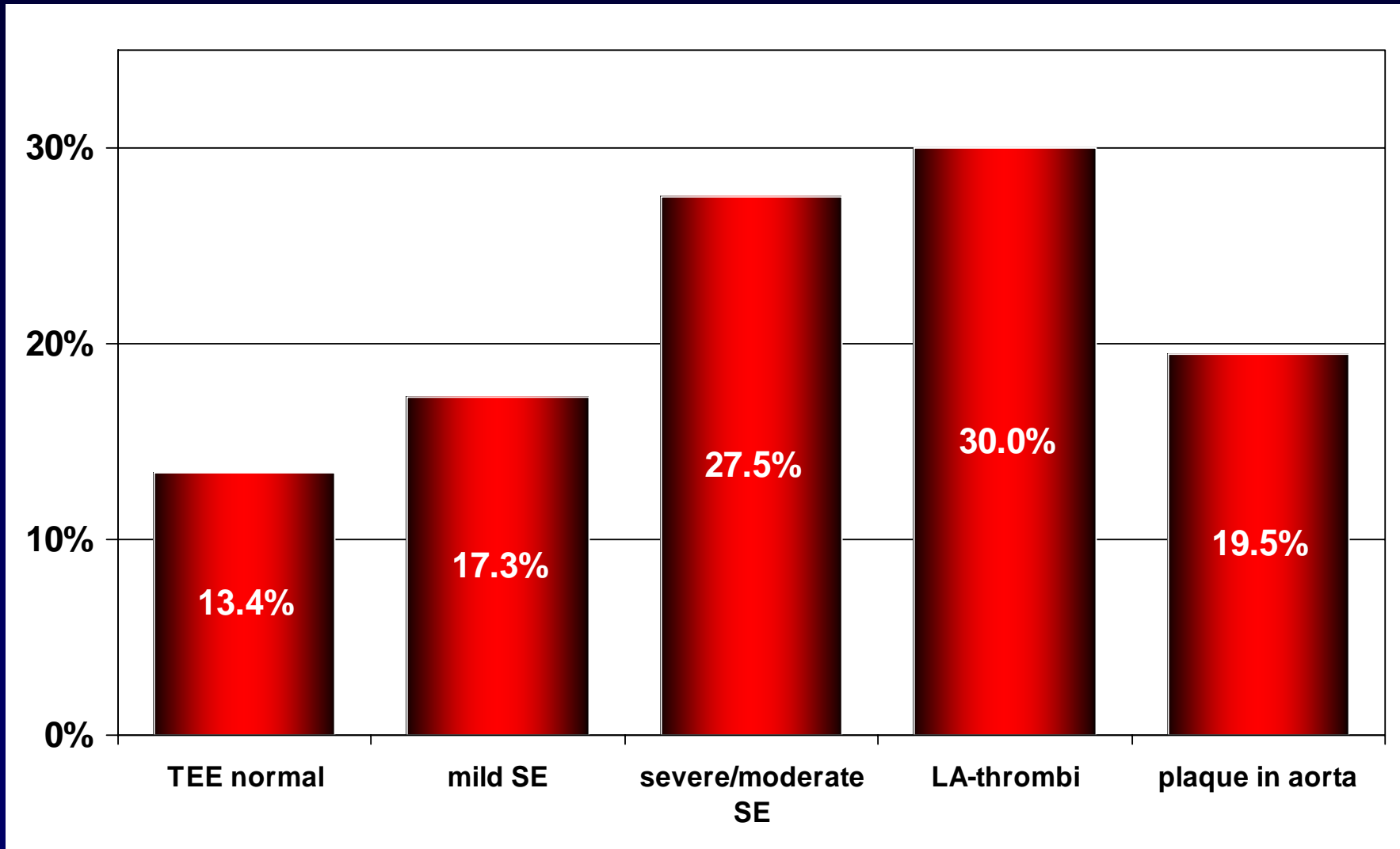


Stroke Rate during FU (5 years) according to TEE-Findings





Mortality during FU (5 years) according to TEE-Findings



Summary

- **TEE guided CV with *short term* anticoagulation is safe**
- **TEE guided CV in anticoagulated pts does not further reduce the stroke rate after CV**
- **OAC after CV is most important**
- **TEE is useful for risk-stratification during long-term FU**

Should a TEE be performed in pts with OAC at least 3 weeks before CV ?

- **NO,** if INR > 2.5
- **YES,** if INR monitoring is unsure,
if INR values before CV < 2 (3 weeks)
- **Unknown,** if INR 2-2.5

*Is TEE guided cardioversion safe
in pts without OAC before CV ?*

- **Yes, if TEE does not reveal LA/LAA-thrombi**
- **Unresolved issues are**
 - **presence of spontaneous echo contrast**
 - **low left atrial appendage peak flow velocity** (< 20 mm/s)

the end

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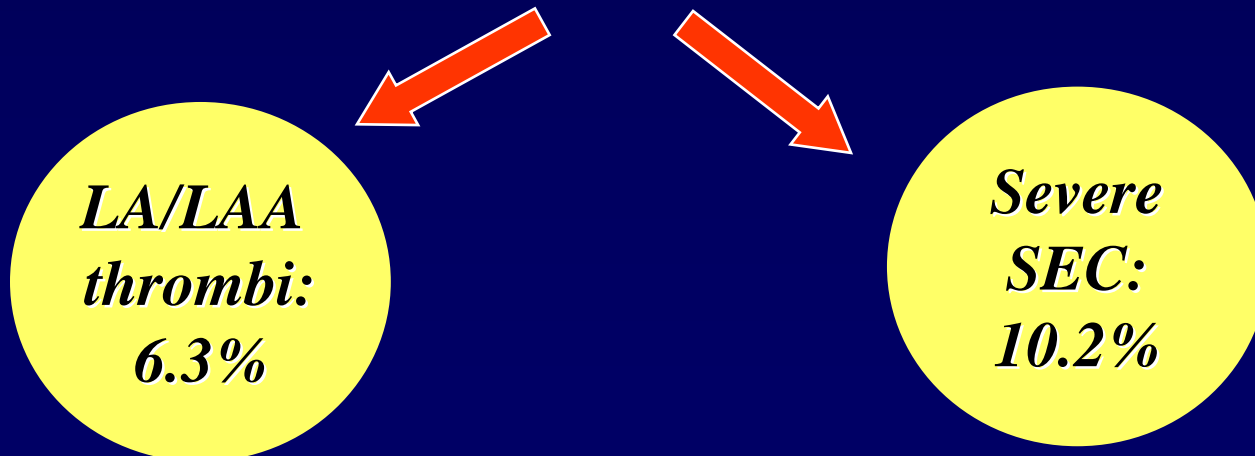
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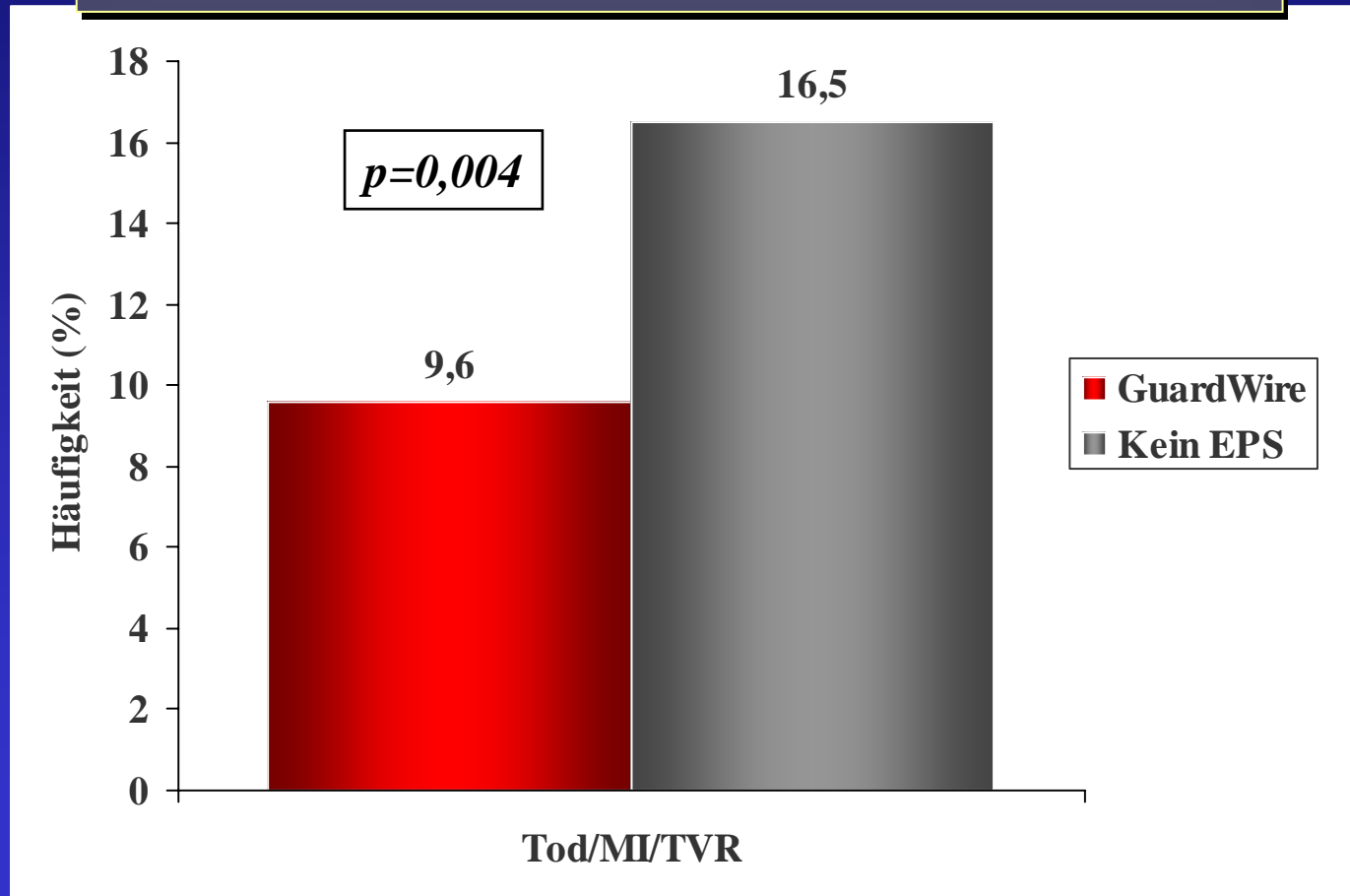
Hintergrund

- *PCI werden an immer älteren Patienten und immer komplexeren Stenosen durchgeführt.*
- *Interventionen an aortokoronaren Venenbypässen sind Risiko-Interventionen (hohe Plaquelast → distale Embolien → no reflow → Myokardnekrosen)*
- *Embolie-Protektionssysteme (EPS) senken die Komplikationsrate bei Bypassinterventionen.*

Vergleich *EPS* vs *keine EPS*

SAFER - Studie

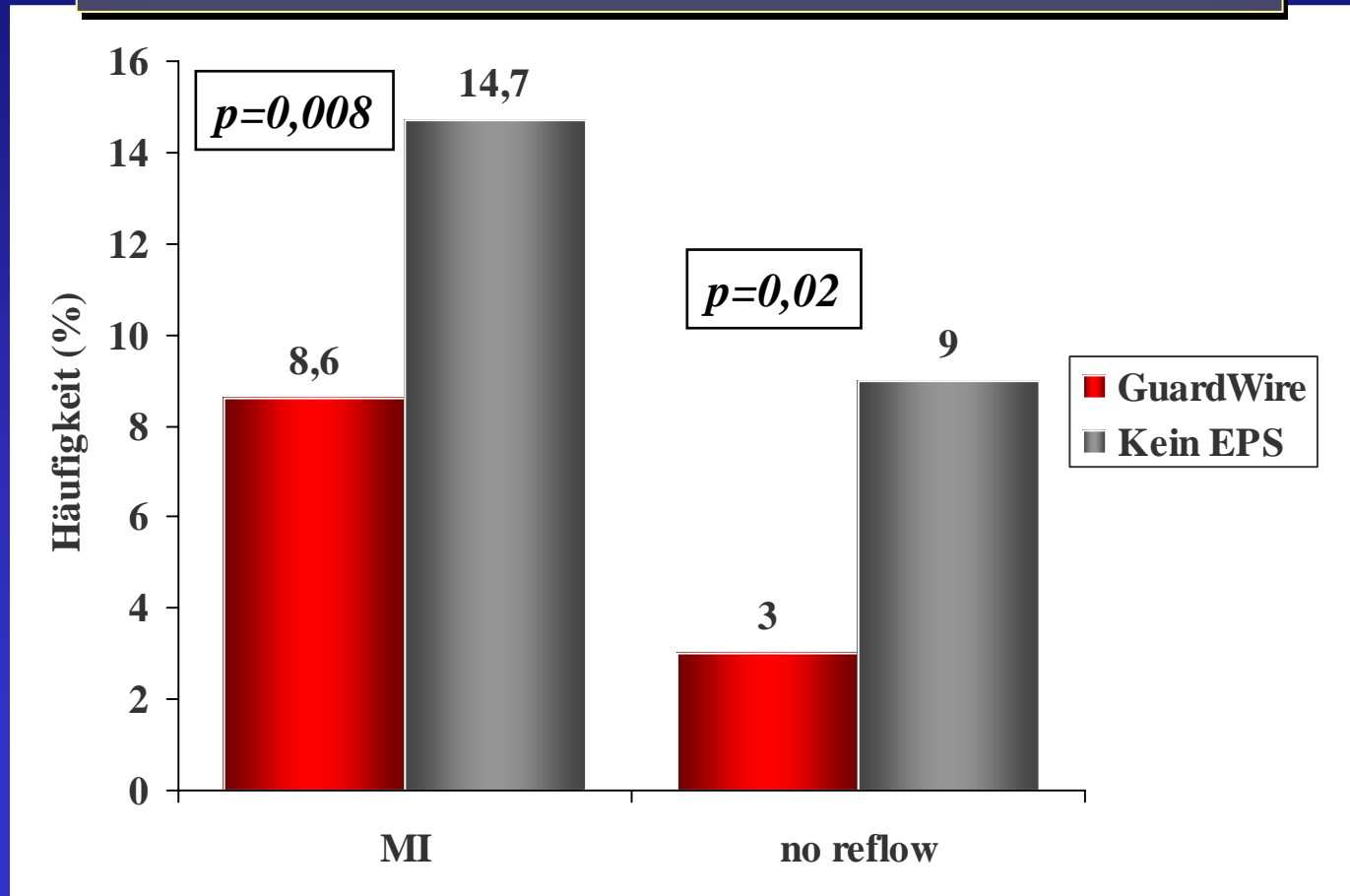
801 Patienten, SVBG Läsionen,
GuardWire vs *kein EPS*



Vergleich *EPS* vs *keine EPS*

SAFER - Studie

801 Patienten, SVBG Läsionen,
GuardWire vs *kein EPS*



Vergleich Filter vs distale EPS

FIRE - Studie

651 Patienten, 682 Läsionen an SVBG,
FilterWire vs GuardWire,

