

Correlation between plaque instability and presence of preoperative ischemic brain lesions in patients undergoing carotid endarterectomy

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I do not have any potential conflict of interest



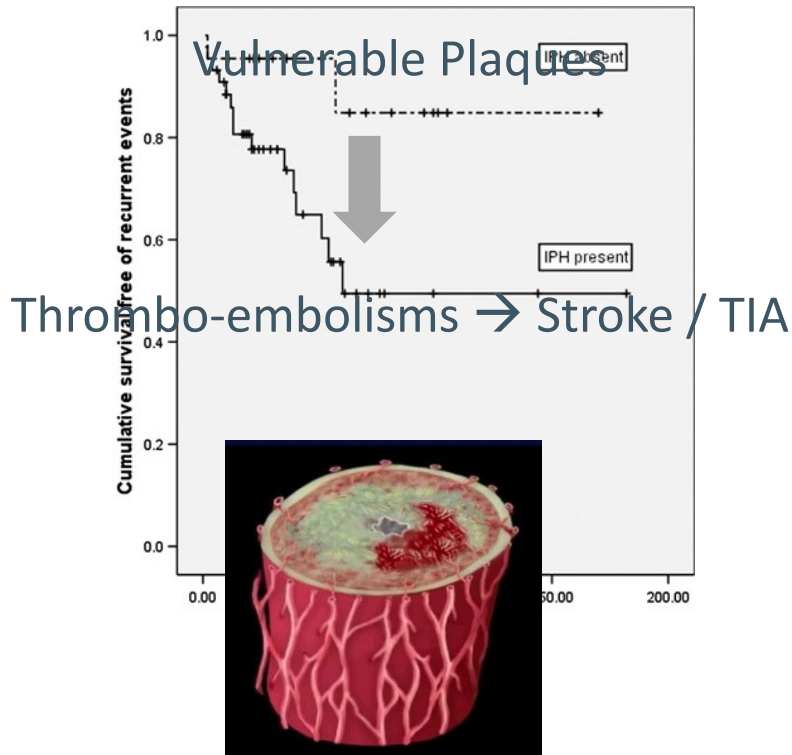
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Background

Carotid Artery Disease



Intraplaque hemorrhage (IPH)

- Associated with higher risk of ipsilateral stroke¹⁻²
- IPH more common in symptomatic patients³
- Symptomatic patients with IPH increased chance of recurrent events⁴

¹ Turc et al, Relationships between recent intraplaque hemorrhage and stroke risk factors in patients with carotid stenosis: The HIRISC study, *Atheroscler. Throm. Vasc. Biol.* 2012

² Takaya et al, Association between Carotid Plaque Characteristics and Subsequent Ischemic Cerebrovascular Events, *Stroke*, 2006

³ Gao et al, Correlation between carotid intraplaque hemorrhage and clinical symptoms: systematic review of observational studies. *Stroke*, 2007

⁴ Altaf et al, Carotid intraplaque hemorrhage predicts recurrent symptoms in patients with high-grade carotid stenosis, *Stroke*, 2007

Background

Patients with instable plaques: High risk interval period

Aim: To investigate the correlation between intraplaque hemorrhage and presence of fresh pre-operative ischemic brain lesions in carotid stenosis patients

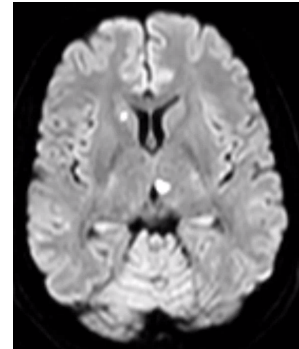
Development of asymptomatic ischemic brain lesions in waiting period?

Magnetic Resonance Diffusion Weighted Imaging (**MR-DWI**) lesions

- Surrogate marker for cerebral ischemia
- Clinically relevant: associated with increased chance of future cerebrovascular events⁵

INDEX EVENT

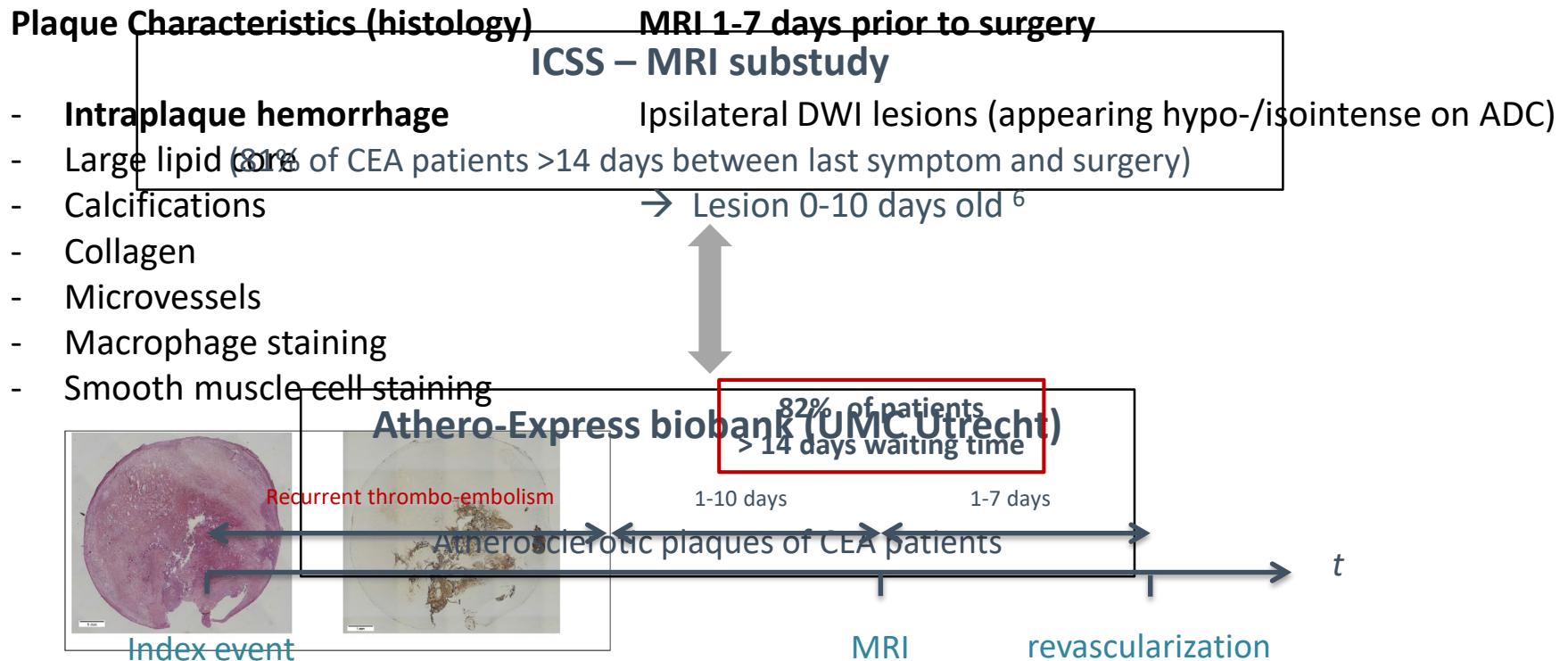
REVASCULARIZATION



⁵ Gensicke, Ischemic brain lesions after carotid artery stenting increase future cerebrovascular risk. *J Am Coll Cardiol.* 2015

METHODS

Retrospective study on prospectively collected data



⁶ Allen et al, Sequence-specific MR Imaging Findings That Are Useful in dating Ischemic Stroke . *RadioGraphics* 2012

RESULTS

Multivariate analysis corrected for age and type of index event
Inclusion of 53 patients No ipsilateral DWI lesions n=40

Ipsilateral	DWI – (n=40)	DWI + (n=13)	OR (adjusted)	<i>p</i> -value multivariate
Intraplaque hemorrhage	60%	92%	10 (1.2-100)	0.036
Lipid core ≥40%	58%	23%	0.18 (0.04-0.836)	0.028
Moderate/heavy calcifications	43%	39%	0.82 (0.22-3.04)	0.770
Moderate/heavy collagen	78%	54%	0.34 (0.09-1.267)	0.107
	DWI – (n=40)	DWI + (n=13)	B (adjusted)	<i>p</i> -value multivariate
% Microvessels	9.15 (5.22)	9.00 (8.00)	1.07 (0.420-2.639)	0.890
% Macrophage staining	0.63 (1.40)	0.74 (1.68)	1.10 (0.286-4.264)	0.886
% Smooth muscle cell staining	1.16 (2.40)	0.91 (1.58)	0.74 (0.217-2.520)	0.630
Waiting time in days (IQR)	45 (24-66)	34 (18-50)	0.179	

DISCUSSION

Patients with intraplaque hemorrhage have an increased risk for recurrent ischemic lesions after the index event

Detection of intraplaque hemorrhage can be helpful in prioritizing patients for timing of revascularization

Low number of patients ↔ first study relating histological plaque features to preprocedural risk of (recurrent) ischemic lesions

Reliable methods for in vivo detection needed

Thank You For Your Attention!

