

SEPTINTOJI TARPTAUTINĖ KONFERENCIJA

THE 7th INTERNATIONAL CONFERENCE

2026 m. liepos mėn. 7-10 d., Vilniaus universitetas, LIETUVA

7th-10th of July, 2026, Vilnius University, LITHUANIA

**EVOLIUCINĖ MEDICINA:
ŽMOGAUS RAIDOS PERSPEKTYVOS IR SVEIKATA
BESIKEIČIANČIOJE APLINKOJE**

**EVOLUTIONARY MEDICINE:
PERSPECTIVES ON HUMAN DEVELOPMENT AND HEALTH
CONSEQUENCES IN A CHANGING ENVIRONMENT**

Rengėjas:

Vilniaus universiteto Medicinos ir sveikatos mokslų
Doktorantūros mokykla, VU Medicinos fakultetas

Organized by

the Doctoral School of Medicine and Health sciences
at Vilnius University, VU Faculty of Medicine

INTERNATIONAL SCIENTIFIC COMMITTEE

Karolis AŽUKAITIS (Vilnius University, Lithuania)
Noël CAMERON (Loughborough University, UK)
Janet CARTON (University College Dublin, Ireland)
Dalius JATUŽIS (Vilnius University, Lithuania)
Maria KACZMAREK (Adam Mickiewicz University, Poland)
Sylvia KIRCHENGAST (University of Vienna, Austria)
Lawrence M. SCHELL (University at Albany, S.U.N.Y, USA)
Wojciech ŚLUSARCZYK (Nicolaus Copernicus University in Torun, Poland)
Janina TUTKUVIENĖ (Vilnius University, Lithuania)
Aistis ŽALNORA (Vilnius University, Lithuania)

LOCAL ORGANIZING COMMITTEE

(Faculty of Medicine, Vilnius University)

Chair:

Janina TUTKUVIENĖ

Conference booklet coordinator:

Rūta MORKŪNIENĖ

Conference Secretary:

Eglė Marija JAKIMAVIČIENĖ

Members:

Justina ALČAUSKAITĖ
Arūnas BARKUS
Elvin Francišek BOGDZEVIČ
Ramunė ČEPULIENĖ
Airida DOSINAITĖ
Rasa JANULIONIENĖ
Kristupas KURMINAS
Rūta MORKŪNIENĖ
Laura NEDZINSKIENĖ
Juozapas RYLIŠKIS
Evita ŠEIKOVAITĖ
Mindaugas SMETANINAS
Eglė STUKAITĖ-RUIBIENĖ
Sofija ŠESTAK
Renata ŠIMKŪNAITĖ-RIZGELIENĖ
Rūta VOSYLIŪTĖ
Violeta ŽALGEVIČIENĖ

COMPARISON OF NOVEL HEMODYNAMIC AND ANATOMICAL METHODS FOR CAROTID ARTERY STENOSIS MEASUREMENT

Andrius BERUKSTIS¹, Kipras MIKELIS², Arvydas BARANAUSKAS¹, Marius KURMINAS², Givi LENGVENIS², Dalius JATUZIS³, Radvilas JANCIAUSKAS⁴, Jurgita VALAIKIENE³, Egidija RINKUNIENE¹, Giedrius DAVIDAVICIUS¹, Sigita GLAVECKAITE¹, Saulius ANDRIUSKEVICIUS³

¹Clinic of Cardiac and Vascular Diseases, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

²Department of Radiology, Nuclear Medicine and Medical Physics, Institute of Biomedical Sciences, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

³Clinic of Neurology and Neurosurgery, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

⁴Faculty of Medicine, Vilnius University, Vilnius, Lithuania

Contact e-mail: kiprasmikelis@gmail.com

Background and Aim: Treatment decisions in asymptomatic carotid artery stenosis remain based on anatomical thresholds, despite limited correlation with hemodynamic significance and stroke risk. While pressure-derived indices guide coronary revascularisation, physiological assessment in carotid disease is largely unexplored. The aim was to evaluate the safety, feasibility, and physiological relevance of invasive pressure-wire assessment in asymptomatic carotid stenosis and to examine its relationship with anatomical imaging and the effects of carotid artery stenting (CAS).

Materials and Methods: In this prospective single-centre study, 30 patients with suspected high-grade asymptomatic carotid stenosis underwent duplex ultrasound screening and pre-procedural MRI. Pressure-wire measurements (Pd/Pa and resting full-cycle ratio [RFR]) were obtained distal to the lesion (M1, C5, C2 segments) before and after CAS. Stenosis severity was assessed using NASCET criteria. Associations between pressure indices, imaging parameters, and collateral circulation were analysed.

Results: Pressure-wire assessment was feasible in all patients without complications. Distal pressure indices were significantly lower in stenotic arteries and strongly correlated with ultrasound and MRI stenosis severity (r up to 0.84, $p < 0.01$). Notably, patients with borderline anatomical stenosis who did not undergo stenting demonstrated pressure values comparable to contralateral arteries. CAS resulted in immediate normalisation of pressure across all segments. A Pd/Pa or RFR threshold of 0.88–0.90 identified $\geq 70\%$ stenosis with high diagnostic accuracy. Collateral anatomy significantly influenced distal pressure behaviour.

Conclusions: Invasive physiological assessment of carotid stenosis is safe, reproducible, and reveals meaningful discordance with anatomical severity. These findings support a potential role for pressure-guided decision-making in carotid revascularisation.

Keywords: carotid stenosis, carotid stenting, collateral circulation, pressure gradient