



## VasCog 2023: 20 years of research on vascular behavioural and cognitive disorders

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### ABSTRACT

This Commentary describes the 20th Anniversary of VasCog 2023, held in Gothenburg, Sweden.

### Overview

In September, 2023, the International Society of Vascular Behavioural and Cognitive Disorders (VasCog) celebrated its 20<sup>th</sup> Anniversary. The VasCog 2023 Conference was hosted in the same city where it convened for the inaugural meeting in 2003, Gothenburg, Sweden. The VasCog Society advances and promotes knowledge and treatment of behavioral, psychiatric and cognitive disorders associated with cardiovascular and cerebrovascular diseases, mechanisms, and risk factors [1]. The overall theme of VasCog 2023 was 'Bridging the Past with the Future and the Heart with the Brain'. Subthemes at VasCog 2023 included cutting-edge advancements in the field of Vascular Cognitive Impairments (VCI) and Cerebral Small Vessel Disease (CSVD), as well as the VCI-Alzheimer's Disease (AD) intersection. Overarching themes are shown in Table 1. Additionally, Master Classes for Early Career Investigators (ECI) on 'Mechanisms in Cerebral Small Vessel Disease – A Translational Forum' were included on the afternoon before the main conference, along with a mid-day forum for global dementia consortia, two invigorating debates about key scientific issues in VCI, poster walks over the noon hour, and one-minute Poster Blitzes. The VasCog Society's

journal, *Cerebral Circulation Cognition and Behaviour* was featured by its Editors-in-Chief, Anders Wallin and Atticus Hainsworth. The audience was urged strongly to support the journal, as the primary scientific dissemination tool of the Society, by submitting quality manuscripts and agreeing to provide peer review of submitted articles when requested.

ECI Master Classes were created based on the theme 'Mechanisms in Cerebral Small Vessel Disease – A Translational Forum' and included sessions on: VCI—Diagnosis and neuropathological features, Biomarkers in VCI, and Future challenges in VCI. These classes were consecutive (non-overlapping) to encourage active discussion among the ECI and between the expert presenters and ECI. The Master Classes were followed by an informal mixer with snacks in an open-air atrium outside the main conference hall. The feedback from ECI participants regarding this event was overwhelmingly positive.

The mid-day forum for global dementia consortia was designed so that representatives from 13 organizations could provide 2-3 min talks to present their network or organization. This was conducted during the latter half of the noon hour following the poster walks. Organizations represented included: the United Kingdom Dementia Research Institute and its vascular themes (UK DRI); the Vascular Professional Interest

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Area (VPIA) of the Alzheimer's Association's International Society to Advance Alzheimer's Research and Treatment (ISTAART); the stroke and cognition consortium (STROKOG) based at the Centre for Healthy Brain Ageing in Australia; the global CADASIL (for cerebral autosomal dominant arteriopathy with subcortical infarcts and leukoencephalopathy) consortium; Meta VCI Map; the Framework for Clinical Trials in Cerebral Small Vessel Disease (FINESSE); 7) the International Stroke Genetics Consortium (ISGC) - Genetics of VCID; global consensus in VCI diagnostic criteria via the Delphi or other approaches; the Dementias Platform UK; the Diffusion-weighted imaging-positive lesion consortium (DIAGNOSE); the global consortium on cerebral microinfarcts (CMEED); MarkVCID Diverse in the United States; and Worldwide-FINGER, a 5-domain approach to dementia prevention comprised of a healthy diet, physical activity, cognitive stimulation, social activities, and the monitoring of risk factors related to cardiovascular disorders.

The two riveting debates included: (1) 'Is Small Vessel Disease (SVD) a clearly defined clinical and pathological entity?' and (2) 'Is it time to force the V [Vascular] in ATN [Amyloid/Tau/Neurodegeneration] classification?' with expert debaters advocating for each question, followed by questions from the audience. The environment was intense, stimulating, and scientifically engaging. Some key take home messages were: (1) SVD is not a clearly defined clinical or pathological entity, (2) it may be possible to identify a subcortical SVD group clinically, and (3) vascular pathology accompanies and or underlies ATN. Research on overlapping cerebrovascular pathologies in relation to cerebral amyloid angiopathy (CAA) underscores this [2–4].

Poster walks and one-minute Poster Blitzes were well-received, providing ECI the opportunity to present their research, share findings, and interact with global leaders in the VCI field. Themed groups of 5-7 posters were set up in the atrium and an expert researcher led each poster walk. The one-minute Poster Blitzes were focused on ECI presentations that were comprised of one Power Point slide that briefly summarized their poster. Each ECI ascended the stage to present results for a quick but thrilling exchange of research insights.

To be expedient in planning VasCog 2023, a Local Organizing Committee (LOC) led by Ingmar Skoog (Sweden) and Scientific Committee (SC) led by Roxana Carare (UK) and Masafumi Ihara (Japan) were formed. The SC and LOC developed the scientific program with the involvement of the VasCog Executive Committee (EC) (Secretary General: Deborah Gustafson and Co-Chairs: Raj Kalaria, John O'Brien) and VasCog ECI co-Chairs (Hilde van den Brink and Anna Marseglia). The SC assessed incoming abstracts and made selections for inclusion. The VasCog SC paid careful attention when drafting the VasCog 2023 Program with respect to gender and global representation of scientists. There was an ~50:50 gender distribution and ~16 countries represented among attendees, including three Low and Middle Income Countries (Nigeria, Georgia and Kazakhstan). The full program of VasCog 2023 sessions was posted on the VasCog website ([www.vascog.org](http://www.vascog.org)). Two SC members (Saima Hilal and Annemieke ter Telgte), as well as the ECI co-Chairs, handled the coordination of the posters, poster walks, and Poster Blitz. The LOC was responsible for all practical local aspects, including careful economic oversight; selection of venue, food and refreshments throughout the conference; and hosting the traditional VasCog party at the same location as the inaugural VasCog meeting 20 years prior. The LOC facilitated the overall conference with generous

input and organization from the SC and members of the EC as aforementioned.

Clinical VCI remains an area of unmet need with no proven symptomatic or disease modifying treatments, however ongoing studies around the world may change the course. Of note, and featured at VasCog 2023, was the intersection between VCI and AD. This was illustrated by sessions on vascular Amyloid Related Imaging Abnormalities (ARIA) related to edema (ARIA-E) and hemorrhages (ARIA-H); [5] and debate on ATN versus VATN. Pathophysiological aspects and mechanisms of SVD underlying VCI remain to be clarified. The epidemiology of VCI and SVD continues to expand with the inclusion of an expanding number of studies and data coming from Low and Middle Income Countries [6] and underrepresented communities in High Income Countries; on sex and gender differences; [7] and with consideration of secular changes in vascular risk factors and cardiovascular treatment regimens. The role of vascular risk factors continues to be up front and center in terms of preventing VCI onset and slowing VCI progression. As aforementioned and highlighted at VasCog 2023, global research consortia addressing VCI and SVD will provide important insights in the 21<sup>st</sup> century. Views of leading experts and VasCog Society members on how the fields of VCI and SVD evolve will continue to be published as editorials in CCCB and reviews in other leading journals [6].

### VasCog ECI

Over the past five years, the VasCog Society has made significant advancements involving ECI. In addition to VasCog EC leadership decisions, these advancements were actualized and accomplished via two energetic and productive co-Chairs (Hilde van den Brink and Anna Marseglia), both of whom transitioned from doctoral students to post-doctoral researchers during their tenure as VasCog ECI co-Chairs. Their efforts focused on building an ECI network through a strategic utilization of various tools, including social media platforms, virtual resources, and in-person events when feasible. Their overarching goal was to establish a robust network capable of fostering collaboration and communication within the ECI community. They created a social media presence and planned and conducted an online conference for VasCog ECI. VasCog ECI co-Chairs created a LinkedIn account for VasCog ECI to foster professional interactions and advancements, collaborations, and scientific dissemination. Within one year of VasCog 2023, the ECI co-Chairs launched a Twitter account to facilitate scientific discourse and dissemination related to the conference. Presenters were encouraged to provide 'sound bites' related to their presentation topic, which were then 'tweeted' to members of the VasCog Society and a ripple effect ensued. The VasCog ECI also have their own Gmail account for communication and coordination purposes. An online VasCog ECI conference was held in 2022 and co-Chaired by Hilde van den Brink and Anna Marseglia, with expert input provided by Geert-Jan Biessels. Abstracts were submitted and three presenters decided upon by Senior VasCog members. The topics included the VCI-AD intersection (astrogliosis and cerebral blood flow in pre-clinical AD models) and the role of the neuroinflammation and the blood-brain barrier in SVD. This symposium was attended by 25-30 ECI and very much liked by the ECI. Plans are ongoing for at least one more ECI symposium in 2024-2025 with the

**Table 1**

VasCog 2023 themes.

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New perspectives in VCI
Updates on hypertension and atrial fibrillation
Inflammation and other mechanisms of VCI
Biomarkers of VCI
Psychiatric conditions and VCI
New VCI diagnoses and classifications
COVID-19 and VCI
What is new in treatment and prevention of VCI

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leadership to two new ECI co-Chairs (Gurpreet Hansra and Audrey Low). In addition, VasCog 2023 featured a dedicated ECI session, where 37 ECI attendees brainstormed about their aspirations, plans, and strategies for further advancing the VasCog ECI community.

### VasCog history

The VasCog Society was founded in the Autumn of 2001 when researchers acknowledged the need for an interactive society that could facilitate conferences, dialog, working groups, and collaborations in VCI. A manifesto was signed in 2002 by global VCI researchers and the first VasCog conference was held in 2003. Since then, a VasCog conference has been held every other year, except during the COVID-19 pandemic when more frequent virtual conferences were hosted, [1] including one for ECI (See Table 2).

### Scientific background

VCI is characterized by multiple clinical presentations, neuropsychological symptoms, cerebrovascular and neurodegenerative pathologies, and genetic backgrounds [8–13]. Vascular risk factors such as hypertension, overweight and obesity, diabetes, and hyperlipidemia increase risk for clinical diagnoses of both AD and VCI [14,15]. Notably, obesity, demonstrates varying relationships with cerebrovascular events in individuals affected by CSVD [7]. The VasCog Society and its conferences have addressed these challenges over time. VasCog also addresses the National Alzheimer's Project Act (NAPA)'s five priority areas [16] and those summarized in the ADRD Summit 2022 Report to the National Advisory Neurological Disorders and Stroke Council that includes the concept of Multiple Etiology Dementias [17]. VasCog members have published multiple position and consensus statements, such as diagnostic criteria for VCI [18] and cerebral small vessel disease [19], and on the controversy over one of the first AD therapies, Aducanumab [20]. VasCog members are leaders in their field with numerous examples of landmark publications from the EC [1,7,21–50]. VasCog members have also contributed to pivotal editorials on diagnostic criteria for VCI and use of these criteria; [18,51–60] the VCI and AD intersection; [20] global meta-analyses on cerebral small vessel disease; [6] and the need to consider vascular contributions to AD [61].

### Conclusion

VasCog 2023 featured numerous outstanding oral and poster presentations on Vascular Behavioural and Cognitive Disorders. Abstracts of the accepted oral and poster presentations are published in this special supplement, based on consent from the contributing author. Abstracts are grouped by Theme as organized for VasCog 2023. We look forward to next meetings in 2025, 2027 and beyond across continents.

### CRediT authorship contribution statement

**D.R. Gustafson:** Conceptualization, Project administration, Writing – original draft. **R. Kalaria:** Conceptualization, Project administration, Writing – review & editing. **J. O'Brien:** Conceptualization, Project administration, Writing – review & editing. **H. van den Brink:** Conceptualization, Project administration, Writing – review & editing. **S. Hilal:** Conceptualization, Project administration, Writing – review & editing. **A. Marseglia:** Conceptualization, Project administration, Writing – review & editing. **A. ter Telgte:** Conceptualization, Project administration, Writing – review & editing. **I. Skoog:** Conceptualization, Methodology, Writing – review & editing.

### Declaration of competing interest

The authors declare no competing interests. However, some co-authors have served on the Executive Committee of VasCog over time

**Table 2**  
VasCog Conferences Since Inauguration of the Society.

Year	Host City or Country	Lead Organizer(s)	# Attendees
2003	Gothenburg	Skoog, Wallin	600
2005	Florence	Pantoni, Inzitari	900
2007	San Antonio	Román	400
2009	Singapore	Chen	350
2011	Lille	Pasquier	300
2013	Toronto	Black	300
2015	Tokyo	Nagata & Abe	500
2016	Amsterdam	Biessels, Van Flier, Scheltens	350
2018	Hong Kong	Mok, Wong	350
2020	Virtual/Newcastle	Kalaria, Markus, O'Brien	110
2021	Virtual/Newcastle	Kalaria, Markus, O'Brien	120
2022	Virtual/The Netherlands, Sweden	van den Brink, Marseglia	25-30 ECI
2023	Gothenburg	Skoog, Carare, Ihara	252

(DG, RK, JO, IS).

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