Cerebral Small Vessel Disease : *A HISTORY*

1800

1838
Deschambres, Paris
'Cerebral softenings' and 'lacune'

1843
Durand-Fardel
'état crible' -
"... disgruntled at the lack of focus on brain tissue at autopsy, especially the interior brain structures...trying to figure out the main features of état criblé."

1902
Ferrand
"Les Lacunes de Désintegration Cérébrale"

1900

1950s - 1960s
C Miller Fisher, Boston, USA.
"Segmental arteriolar disorganisation." Meticulous dissections of individual penetrating arterioles in 'lacunar stroke'.

c1970
Stroke Prone Spontaneously Hypertensive Rat (SHRSP) rat model bred

1972
Godfrey Hounsfield co-invents Computed Tomography (CT) with Dr. Alan Cormack

1973
Lauterbur
First MR image: two test tubes of water

1980

1980
First clinical MRI scanners installed

1986
Hachinski et al
"Leukoaraiosis"or white matter lesions of vascular origin on CT.

1987
Fazekas et al
Fazekas Score to quantify the amount of white matter T2 hypertensities on MRI.

1990

1990s
Lammie, Pairier
Four subtypes of lacunar stroke pathology

1990s
Lacunes in imaging.

1991
Bamford et al, Oxford
OCSP stroke subtype clinical classification
LACI, PACI
TACI, POCI

1993
Adams
TOAST, risk factor based stroke classification

1996
Microbleeds

2000

2001
VasCog
Society forms

VasCog

2001
Wardlaw
Abnormal arteriole in lacunar stroke

c2005
Diffusion Tensor Imaging (DTI) reveals underlying white matter structure

2003
Wardlaw
Blood Brain Barrier hypothesis

2003
Perivascular Spaces

2006
Hachinski
NINDS-CSN Vasc cognitive impairment tests

International Stroke Genetics Consortium

2007
Bailey
SHRSP models SVD

2007
International Stroke Genetics Consortium

2009
Potter et al
Visual PVS

2010

2010
BBB abnormal in SVD

2011 - 2013
SHRSP predisposition to SVD not just HT

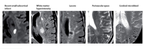
2011
Genetics – large studies of WMH and lacunar stroke eg CHARGE consortium

CHARGE CONSORTIUM
COHORT HEALTH AND RESEARCH GENOMICS EXPLORATION

2012
SPS3 (Secondary Prevention of Small Subcortical Strokes)Trial

SPS3

2013
STRIVE-1 (STandards for Reporting Vascular changes on nEuroimaging)



c2014
CVR abnormal in SVD

2015

2015
Staals et al
Total SVD Score

2015

2016
METACOHORTS for the study of vascular disease and its contribution to cognitive decline and neurodegeneration

2016
Ihaving
PSMD

SVDs @target

2017
INVESTIGATE@SVDs (Imaging NeuroVascular, Endothelial and STructural InteGrity in prepARation to TrEat Small Vessel Diseases)

INVESTIGATE SVD

2017
SVDs@TARGET (Small vessel diseases in a mechanistic perspective: Targets for InterventionAffected pathways and mechanistic exploitation for prevention of stroke and dementia)

2017
STROKOG (Stroke and Cognition Consortium)

STROKOG

2018
Hachinski
"The commonest manifestation of cerebrovascular disease is cognitive impairment, not stroke"

2018
Ballerini et al
PVS Computational Measures

2018
MARK-VCID (Biomarkers for Vascular Contributions to Cognitive Impairment and Dementia)

MARK VCID

2017
Rajani
SHRSP ATP11B gene defect

2018
PRESERVE Trial (Randomized Trial of Intensive Versus Standard Blood Pressure Control in Small Vessel Disease)

2019
HARNESS (HARmoNizing Brain Imaging MEthodS for VaScular Contributions to Neurodegeneration)

2019
MICON microbleeds consortium

2019
SHRSP / defect identified

2018
WMH Shrinkage

2019
SPRINT-MIND (Systolic Blood Pressure Intervention Trial Memory and Cognition in Decreased Hypertension)

2019
LACI-1 (LACunar Intervention-1)

laci-1

2019
META-VCI Map

2018 - 2024
R4VaD (Rates, Risks & Routes to Reduce Vascular Dementia)

iR4VaD Rates Risks and Routes to Reduce Vascular Dementia

2020

2020
International PVS Collaboration

Perivascular spaces in small vessel disease
Consortium on Vascular Mechanisms of Neurodegeneration

2021
ZOOM@SVDs (Zooming in on cerebral small vessel function in small vessel diseases with 7T MRI)

ZOOM@ SMALL VESSEL DISEASES SVD

2021
ESO Guideline on covert cerebral small vessel disease Part 1

ESO EUROPEAN STROKE ORGANISATION

2021 - 2022
Quick ATP11B Knock Out Rat

2022
FINESSE (Framework for Clinical Trials in Cerebral Small Vessel Disease)
SVD Trials Guidance

2023
LACI-2 (LACunar Intervention-2)

laci-2 LACUNAR INTERVENTION TRIAL 2

2023
STRIVE-2 (STandards for Reporting Vascular changes on nEuroimaging)

2023
TREAT@SVDs (The EffecTs of Amlodipine and other Blood PRESsure Lowering Agents on Microvascular FunCTion in Small Vessel Diseases)

TREAT@ SMALL VESSEL DISEASES SVD

2024
ESO Guideline on covert cerebral small vessel disease Part 2

ESO EUROPEAN STROKE ORGANISATION

2025 - 2029
LACI-3 (LACunar Intervention-3)

laci-3 LACUNAR INTERVENTION TRIAL 3

2025

Pink - Preclinical studies
Black – Pathology studies
Green – Clinical studies
Orange – Randomised trials
Blue – Imaging (CT or MRI) studies
Violet – Large scale consortia studies