NIH Public Access
Author Manuscript
Alzheimer Dis Assoc Disord. Author manuscript; available in PMC 2015 July 01.

Published in final edited form as:
Alzheimer Dis Assoc Disord. 2014 ; 28(3): 206–218. doi:10.1097/WAD.0000000000000034.

Diagnostic criteria for vascular cognitive disorders: a VASCOG statement

Perminder Sachdev, MD* **[Scientia Professor]**,
Neuropsychiatry, School of Psychiatry, University of New South Wales, Sydney, Australia

Raj Kalaria, PhD, FRCP [Professor],
Cerebrovascular Pathology (Neuropathology), Institute for Ageing and Health, Newcastle University, Campus for Ageing and Vitality, Newcastle-Upon-Tyne NE4 5PL, United Kingdom

John O'Brien, DM [Professor],
Old Age Psychiatry, Institute for Ageing and Health, Newcastle University, Campus for Ageing and Vitality, Newcastle NE4 5PL, UK

Ingmar Skoog, PhD [Professor],
Social Psychiatry and Epidemiology, Neuropsykiatri SU/M﷽lndal, Wallinsgatan 6, 431 41 M﷽lndal, Sweden

Suvarna Alladi, DM,
Department of Neurology, Nizam's Institute of Medical Sciences, Hyderabad, India

Sandra E Black, MD FRCP(C) [Brill Chair],
Neurology, University of Toronto, Sunnybrook Health Sciences Centre, Room A421- 2075 Bayview Avenue, Toronto, ON M4N 3M5

Deborah Blacker, MD, ScD [Associate Professor],
Psychiatry, Harvard Medical School, Boston Mass., USA

Dan Blazer, MD [JP Gibbons Professor],
Psychiatry and Behavioral Sciences, Duke University Medical Center, Durham, North Carolina 27710, USA

Christopher Chen, FRCP [Director],
Memory Aging and Cognition Centre, National University Health System, Kent Ridge Road, Singapore 119228

*Corresponding Author: Prof Perminder Sachdev, School of Psychiatry, Faculty of Medicine, University of New South Wales, NPI, Euroa Centre, Prince of Wales Hospital, Barker Street, Randwick NSW 2031, Australia, Tel: +612 9382 3763, Fax: +612 9382 3774, p.sachdev@unsw.edu.au.

AUTHOR CONTRIBUTIONS

Perminder Sachdev initiated the project, summarized results of the discussions, wrote the first draft, and finalized the manuscript. Raj Kalaria, John O'Brien, Ingmar Skoog, Suvarna Alladi, Sandra Black, Deborah Blacker, Dan Blazer, Christopher Chen, Helena Chui, Mary Ganguli, Kurt Jellinger, Dilip Jeste, Florence Pasquier, Jane Paulsen, Niels Prins, Kenneth Rockwood, Gustavo Roman and Philip Scheltens reviewed the literature, made substantive contributions to the content, and provided comments on multiple drafts of the manuscript.

Dr. Alladi reports no disclosures.
Dr. Chui reports no disclosures.
Dr. Jellinger reports no disclosures.
Dr. Roman reports no disclosures.

NIH-PA Author Manuscript
NIH-PA Author Manuscript
NIH-PA Author Manuscript
guide.medlive.cn

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

Helena Chui, MD [McCarron Professor and Chair],
Department of Neurology, University of Southern California, Keck School of Medicine, Los Angeles, CA, USA

Mary Ganguli, MD [Professor],
Psychiatry, Neurology, and Epidemiology, University of Pittsburgh School of Medicine and Graduate School of Public Health, Pittsburgh, USA

Kurt Jellinger, MD [Director],
Institute of Clinical Neurobiology, Kenyongasse 18; A-1070 Vienna

Dilip V. Jeste, MD,
Estelle and Edgar Levi Chair in Aging and Distinguished Professor of Psychiatry and Neurosciences, University of California, San Diego, California 92093, USA

Florence Pasquier, MD, PhD,
University Lille Nord de France UDSL and Memory Clinic, CHU, 59000 Lille, France

Jane Paulsen, PhD [Professor],
Psychiatry, Neurology, Psychology and Neurosciences, The Carver College of Medicine, The University of Iowa, Iowa City, IA 52242, USA

Niels Prins, MD,
Alzheimer Centre and Department of Neurology, VU University Medical Centre, Amsterdam, the Netherlands

Kenneth Rockwood, MD [Professor],
Medicine (Geriatric Medicine & Neurology) and Kathryn Allen Weldon Professor of Alzheimer Research, Dalhousie University Halifax NS Canada B3H 2E1

Gustavo Roman, MD, and
Jack S. Blanton Distinguished Chair, Director Nantz National Alzheimer Center, Methodist Neurological Institute, 6560 Fannin Street, Suite 802, Houston, Texas 77030, USA

Philip Scheltens, MD
Alzheimer Centre and Department of Neurology, VU University Medical Centre, Amsterdam, the Netherlands

Background—Several sets of diagnostic criteria have been published for vascular dementia (VaD) since the 1960s. The continuing ambiguity in VaD definition warrants a critical re-examination.

Methods—Participants at a special symposium of the International Society for Vascular Behavioral and Cognitive Disorders (VASCOG) in 2009 critiqued the current criteria. They drafted a proposal for a new set of criteria, later reviewed through multiple drafts by the group, including additional experts and the members of the Neurocognitive Disorders Work Group of the DSM-5 Task Force.

Results—Cognitive disorders of vascular etiology are a heterogeneous group of disorders with diverse pathologies and clinical manifestations, discussed broadly under the rubric of vascular

guide.medlive.cn

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

cognitive disorders (VCD). The continuum of vascular cognitive impairment is recognized by the categories of *Mild Vascular Cognitive Disorder*, and *Vascular Dementia or Major Vascular Cognitive Disorder*. Diagnostic thresholds are defined. Clinical and neuroimaging criteria are proposed for establishing vascular etiology. Subtypes of VCD are described, and the frequent co-occurrence of Alzheimer's disease pathology emphasized.

Conclusions—The proposed criteria for VCD provide a coherent approach to the diagnosis of this diverse group of disorders, with a view to stimulating clinical and pathological validation studies. These criteria can be harmonized with the DSM-5 criteria such that an international consensus on the criteria for VCD may be achieved.

Keywords

Vascular dementia; vascular cognitive disorder; vascular cognitive impairment; diagnostic criteria; cerebrovascular disease; multi-infarct dementia; post-stroke dementia; subcortical dementia

1. INTRODUCTION

Cerebrovascular disease (CVD) has long been recognized as an important cause of cognitive impairment, but the conceptualization of the consequent disorder has had a chequered history. The long-standing concept of 'hardening of the arteries' or cerebral atherosclerosis as a cause of 'senility'[1] was challenged in the 1960s by the neuropathological studies from Newcastle-Upon-Tyne, England which suggested that vascular dementia (VaD) was related to multiple brain infarctions exceeding a certain threshold, and distinct from Alzheimer's disease (AD).[2] The concept was further elaborated in a 1974 paper[3] which stated that "… when vascular disease is responsible for dementia it is through the occurrence of multiple small or large cerebral infarcts". This led to the widespread use of the term multi-infarct dementia (MID) as being synonymous with VaD.[3] The last two decades have witnessed a major challenge to this narrow conceptualization of VaD, with the publication of several sets of criteria for VaD[4–8] which expanded the concept to include not only multiple cortical and/or subcortical infarcts, but also strategic single infarcts, non-infarction white matter lesions, hemorrhages, and hypoperfusion as possible causes of VaD. Much ambiguity in the definition of VaD continues to beset the field, which warrants a critical examination and updating of the extant criteria.

1.1. Limitations of current criteria sets for VaD

The four commonly used sets of criteria for VaD are: the National Institute of Neurological Disorders and Stroke-Association Internationale pour la Recherché et l'Enseignement en Neurosciences (NINDS-AIREN) criteria,[4] the State of California Alzheimer's Disease Diagnostic and Treatment Centers (ADDTC) criteria,[5] the DSM-IV criteria[6] and the ICD-10 criteria,[7] with the latter two being more general and less operationalized than the first two. Many clinicians and researchers continue to use the ischemic score[8] and its modifications to diagnose VaD even though it was not designed for this purpose. Less commonly used are criteria that are specific for subcortical vascular dementia.[9] The NINDS and the Canadian Stroke Network, at a workshop convened in 2006,[10] harmonized the standards of assessment of various aspects of cognitive impairment due to vascular factors and made a number of

guide.medlive.cn

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

recommendations to improve the quality of the data. As a result, many limitations of the currently available criteria for VaD were highlighted, some of which were common to the various criteria, while others applied only to specific sets.

First, the emphasis on 'dementia' in 'vascular dementia' appears to be misplaced for two reasons. The term dementia has increasingly become equated with AD in the popular mind, even though AD accounts just over one-half of all cases of dementia.[11] Secondly, it prejudices against the early recognition of cognitive impairment due to vascular pathology. While it is generally accepted that such impairment lies on a continuum, and the category of VaD uses a severity-based threshold which identifies the disorder at a late stage. Yet potentially disease-modifying treatments may be more effective before this stage is reached. Thus there have been repeated calls to abandon VaD in favor of an overarching description of vascular cognitive impairment (VCI)[12,13] to overcome this limitation.

Third, the domains of cognitive functioning that are considered for the diagnosis of VaD have been criticised.[11,14] Three of the four commonly used criterion sets mentioned above require memory impairment as necessary for the diagnosis of VaD, using a definition of dementia based on clinical features of AD. There is substantial evidence to suggest that disturbance in frontal-executive functions, rather than memory, is often the more salient feature of VaD,[14] memory impairment may in fact be absent in some cases with significant cognitive deficits or its characteristics may be different from those seen in AD[14].

Fourth, the criteria sets differ significantly on the requirements for levels of cognitive impairment, number and location of strokes, neuroimaging abnormalities and neurological features, such that when applied to the same data set, the prevalence estimates can vary by many orders of magnitude.[15,16] It is therefore necessary that each aspect of the criteria is critically examined, preferably with sound empirical evidence.

Fifth, VaD is not one disease but rather has diverse etiologies, only some of which have well-characterized clinical manifestations.[17] The extant criteria do not necessarily take this diversity into consideration.

Sixth, while VaD is generally regarded as the second most common single cause of dementia after AD,[18] many older individuals with dementia suffer from a combination of vascular and Alzheimer-type pathology with an additive effect on cognition,[19] which is sometimes referred to as 'mixed' dementia. Furthermore, there is increasing recognition that vascular and neurodegenerative processes may interact, so that risk factors for CVD also increase the risk of AD.[20] The co-occurrence of the two pathologies may therefore be more frequent than by chance, and any classification should recognize this overlap.

This proposal addresses some of these limitations in light of recent developments, not only in VaD but also in relation to the development of new criteria for AD at the dementia and pre-dementia stages,[21,22] and to the publication of the fifth revision of the Diagnostic and Statistical Manual (DSM-5) of the American Psychiatric Association.[23] Recently, the American Stroke Association also published a comprehensive consensus statement on vascular cognitive impairment, including new proposed criteria for probable and possible VaD and Vascular Mild Cognitive Impairment (VaMCI).[24]

guide.medlive.cn

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

2. METHOD

A special symposium on the classification of vascular cognitive disorders (VCD) was organized as part of the 4th Congress of the International Society for Vascular Behavioural and Cognitive Disorders (VASCOG) in Singapore on 13 January, 2009. Experts in this field who attended that meeting reviewed the current evidence and critique the extant criteria. Based on the discussions, a draft proposal for a new set of criteria was drafted and reviewed by the group, including additional experts who had not attended the symposium. Multiple further drafts were similarly circulated after recommendations had been incorporated. The criteria were discussed at the 5th VASCOG conference in September 2011 in Lille, France and the 6th VASCOG conference in June 2013 in Toronto, Canada before being finalized.

3. RESULTS

3.1. Criteria for vascular cognitive disorders (VCD)

There are two aspects to the diagnosis of a VCD: i) the establishment of the presence of a Cognitive Disorder; and ii) the determination that vascular disease is the dominant if not exclusive pathology that accounts for the cognitive deficits. While the history of cerebrovascular disease often prompts the careful physician to explore the presence of cognitive deficits, the usual clinical process is that the cognitive disorder is established first and then its etiology is interrogated.

3.1.1. Establishing the presence of a cognitive disorder—The term 'cognitive disorder' has previously been applied to this entity,[25] while the term used in DSM-5[23] is 'neurocognitive'. Recent authors have used the term 'vascular cognitive impairment (VCI)' as an overarching term for the vascular cognitive syndromes.[12,13]

The term 'impairment' in this context has two limitations: a) Impairment is used in medicine to indicate a reduction or loss of function in any domain of functioning, and is applied either as a statistical construct based on normative data or a demonstration of disability; and b) VCI has sometimes been used in the literature to also denote mild cognitive impairment due to vascular factors insufficiently severe to be diagnosed as dementia. Our proposal for the use of 'vascular cognitive disorder (VCD)' recognizes that there is often a need for a categorical diagnosis, which encompasses mild impairment, pre-dementia and dementia syndromes. It can embrace many syndromes and diseases, and also acknowledge the fact that many patients with cerebrovascular disease also have non-cognitive syndromes such as depression, anxiety and psychosis. Functional 'impairment' is then understood as a consequence of the disorder rather than a diagnostic criterion for it. The use of the plural term 'disorders' acknowledges that VCD comprises many diseases, each with varying severity and patterns of dysfunction. Implicit in the term is the recognition that there has been a decline from a previously higher level of functioning, either documented with longitudinal data or inferred from a premorbid level.

There are two requirements for a cognitive disorder to be diagnosed: a subjective report and objective or test evidence of deficits.

guide.medlive.cn

以上内容仅为本文档的试下载部分，为可阅读页数的一半内容。如要下载或阅读全文，请访问：https://d.book118.com/358136067107006047