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LETTER TO EDITOR

Clinical Characteristics for Identifying between Mixed Vascular-Alzheimer's Dementia and Alzheimer's Disease in Outpatient Geriatric Patients

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Abstract

The current study aimed to support vascular risk factors and clinical signs in distinguishing MVAD from AD. It is necessary to re-evaluate preceding cardio and cerebrovascular risk factors in elderly pre-dementia geriatric patients in order to to classify MVAD prodromal-dementia population from other neurodegenerative disorders that can be treated early to suppress syndrome-severity, or delay the onset of pervasive dementia symptoms.

Keywords

Cardiovascular etiology and risk factors, Geriatric syndrome, Dementia

Introduction

The significant rise in the number of older adults with multiple diseases, frailty, and physical disabilities due to different neurologic impairments raises the need for ongoing geriatric consultation to monitor or identify the onset of dementia syndrome and cognitive symptoms across ages 60 to 90 [1]. Particularly in older people at higher risk for entering pre-dementia states [2]. Mixed Vascular-Alzheimer's Dementia (MAVD) is coexistence of both neuro-atrophy factors, as in Alzheimer's disease (AD), and cardiovascular risk factors (CVRF) as in vascular dementia, in the same patient [3]. Thus, the current study aimed to compare baseline demographic, etiological, and clinical quantitative features (e.g., peripheral vascular measurements) that may distinguish between those geriatric clinical subgroups suggesting immediate course of treatments that may alleviate symptom severity and functional impairment as the disease progresses.

The study examined 192 geriatric out-patients. Their systemic vascular symptoms were noted during their consultation visit, with ages spanning from 60-97 years-old, with mean age of 83.04. Patients were referred for clinical consultation by their family physician (GP) regarding their medical condition and were diagnosed at the clinic during their visit for medical consultation. All study variable collected during a 90 minutes visit at the clinic by a geriatric physician and nurse. The study represents a point-prevalence study design attempting to identify differences in categorical factors denoting differences in demographic, clinical, and cognitive-state variables.

During the visit at the clinic, the patient's disease etiology was noted according to variables such as socio-demographic characteristics (age, gender and family status), ongoing neuro-cardiovascular risk factors (CVRF) diseases (diabetes mellitus adult type 2, high blood pressure, Ischemic heart disease, hyperlipidemia and brain strokes). Additionally, the prevalence of obesity was noted, along with functional capacity level (High dependency in ADL or IADL), repetitive behavioral problems, gait-instability, arrhythmias such as Atrial fibrillation and noting of no palpation during assessment of peripheral pulses in legs.

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Table 1: Proportion differences in demographic and clinical risk factors among individuals with MVAD versus individuals with AD.

		AD (N = 39)		MVAD (N = 69)		χ^2	P-value
		N	%	N	%		
Gender	Male	12	30.8%	41	59.4%	8.184	0.004
	Female	27	69.2%	28	40.6%		
Age	84-	16	36.4%	40	56.3%	4.338	0.037
	85+	28	63.6%	31	43.7%		
Family Status	Widower	29	46.8	21	55.3%	3.767	0.288
	Unmarried	1	1.6	2	5.3%		
	Married	31	50	13	34.2%		
	Divorced	1	1.6	2	5.3%		
Peripheral Pulse	Yes	32	82.1%	17	24.6%	33.137	< 0.001
	No	7	17.9%	52	75.4%		
Behavioral Problem	Yes	25	69.4%	33	47.1%	4.772	0.029
	No	11	30.6%	37	52.9%		
Functional	Independent	20	45.5%	44	62%	8.259	0.041
	Bed bound	5	11.4%	9	12.7%		
	High dependency in instrumental activities of daily living (IADLs)	9	20.5%	3	4.2%		
	High dependency in activities of daily living (ADL)	10	22.7%	15	21.1%		
AF or Arrhythmia	Yes	4	13.8%	19	29.7%	2.708	0.100
	No	25	86.2%	45	70.3%		
Obesity	Yes	7	28%	16	34%		
	No	18	72%	31	66%	0.274	0.601
Instability when standing	Yes	26	68.4%	52	80%	1.749	0.186

Finally, the prevalence of dementia-related cognitive impairment was evaluated using mini mental state exam (MMSE) scores of Folstein.

Following a descriptive data analysis across all refereed dementia patients, we identified 108 (54%) dementia patients out of 192 baseline elderly patients. Dementia subgroups were classified to the MVAD group (36%), and the AD group (20.3%). The other patients that were referred to the clinic were without dementia, exhibiting mainly physical 39 (20.3%) or psychiatric 16 (8.3%) issues in their medical history, and a subgroup of patients displaying MCI 29 (15.1%), that is considered a pre-dementia state.

Table 1 present the proportion of MVAD was higher in men (59.4%), while the proportion of AD was higher in women (69.2%), (p = 0.004).

MVAD diagnosis was more prevalent in patients under the age of 85 (56.3%) while AD was proportionally higher in the older ages (85 years or older) (63.6%) (p = 0.037). Functional high dependency of IADL severity was more pronounced in AD patients (20.5%) while MVAD proportion with significant high dependency of IADL functional disability was only 4.2% (p = 0.041). Family status was not statistical significant. Palpable peripheral pulse (in the legs/foot) was found to be a significantly pronounced in AD patients (82.1%) while the proportion in the MVAD was significantly lower 24.6% (P > 0.001). Behavioral disturbances were also significantly in higher proportion in the AD group (69.4%) while the proportion in MVAD was 47.1% (P < 0.029).

The known CVRF variables (diabetes mellitus adult type 2, high blood pressure, Ischemic heart disease, hyperlipidemia and brain strokes) and the atrial fibrillation-type arrhythmia, obesity, instability was not found to be different in their proportions between the two study groups. Lower MMSE scores were found in AD patients compared to MVAD patients, (AD, Mean = 12.95, SD = 5.208) (MVAD, Mean = 15.89, SD = 4.609), DF = 109 [t = 3.075, p < 0.01].

The most prominent finding in current study is the lower proportion AD versus MVAD in a typical geriatric outpatient population. The results support the theoretical perspective suggesting that MVAD represents a geriatric syndrome [1,2]. MVAD-based geriatric syndromes seem to represent a final pathway affected by a multi-factorial pathophysiological process (e.g., such as thrombosis, emboli, atherosclerosis and cardiac arrhythmias), which can lead to abnormal blood perfusion and limited oxygen-levels in the brain. These pathophysiological conditions can be observed in

vascular cognitive impairment (VCI) patients and seem to represent a primary precursor stage leading to onset of dementia [4].

In recent years, new research findings seem to support the connection between uncommon or novel cardio-vascular risk factors (CVRF) and cognitive decline observed in early prodromal or mild dementia stages [5,6]. In light of these findings, it is necessary to re-evaluate preceding cardio and cerebrovascular risk factors in elderly pre-dementia geriatric patients that may distinguish a unique MVAD prodromal-dementia population that can be treated early to suppress syndrome-severity, or delay the onset of pervasive dementia symptoms.

However, unlike the current findings, contemporary clinical research examining AD diagnosis in the older population consistently highlights the higher proportion of AD versus MVAD in people over the age of 65. Their findings suggest increased rate of AD diagnoses, which may stem from the lack of standard assessments routinely examining specific critical (CVRF) cerebral-cardio vascular risk factors and the scarcity of empirical clinical findings associated with different etiologies in elderly patient's disease-specific, pre-dementia, to prevent accelerated cognitive decline by monitor and facilitate early interventions to postpone neurovascular deterioration.

Obtaining the medical history and carrying out meticulous clinical examination noting hypotension, blood pressure while sitting and standing, excessive bradycardia, atrial fibrillation or fatal arrhythmias could be instrumental in early detection of pre-dementia stages and for planning the proper course of treatment. Finding murmurs (heart or carotid artery), not palpable of peripheral pulses in the feet (related to stenosis), and assessing stability of gait while walking could all be informative in detecting MVAD versus AD.

The potential for reliably diagnosing MVAD etiology is important because it may affect the course of treatment and prevent rapid neuro-deterioration. In cases of atrial fibrillation, such as arrhythmia resulting in shower of emboli, clinicians can apply atrial ablation procedures and induce a return to sinus rhythm. Aortic valve stenosis can be applied within valve replacement procedures. Interventions such as stent placement or bypassing carotid artery stenosis, and avoiding strokes. Fatal arrhythmias (ventricular fibrillation) could be prevented by cardioversion pacing and may delay further cognitive deterioration and disease progression. These conditions, if untreated, can lead to reduced blood-flow and lower oxygen levels in the brain [7,8]. Recommended behavioral interventions to slow down the cognitive decline such as changing problematic lifestyle habits (weight loss, reduction in carbohydrate, salt and sugar consumption, and taking medication to reduce excessive hypertension, hyperglycemia and high cholesterol) should be administered following the clinical evaluation [9]. Additional clinical risk factors that can be assessed and treated by reducing excessive use of pharmacological treatments (i.e. polypharmacy) for hypertension and diabetes (resulting in hypotension, hypoglycemia low sugar level and lower heart rate resulting in bradycardia). The geriatrician should also note the physical history and a detailed medical background that includes medications that may affect the central nervous system (CNS) (e.g., anticholinergics, antihistamines, narcotics, antidepressants, etc.).

The current findings suggest that major vascular categorical variables such as the occurrence of non-palpations of peripheral pulse in legs, behavioral problems, and dependency in instrumental activities of daily living (IADLs) were significantly higher in proportion in the MVAD group versus AD groups, and are likely to reflect signs of chronic vascular problems such as atherosclerosis, shower of blood clots into arteries of CNS, increases risk of lacunar stroke, and risk for brain-embolism episodes which should be evaluated during routine geriatric assessments.

Importantly, as a result of differences in gender representation in the two different groups, it is suggested that men are at greater risk for MVAD while women are in greater risk for AD. In correspondence, patients within the lower age range are likely to be at higher risk for MVAD while patients at the older age-range (85 years and older) seem to be at greater risk for AD. These findings are consistent with the current scientific literature [10].

To further support these vascular risk factors and clinical signs in distinguishing MVAD from AD, we suggest employment of cohort longitudinal study with functional neuroimaging measurements (e.g., fMRI and ERP parameters of brain reactivity to specific stimuli), in conjunction with cross-sectional randomized controlled studies in larges geriatric-patient samples. Additionally, including other reliable neurocognitive markers (e.g. working memory reaction times) and specific cardiovascular risk factors to detect MVAD versus AD and can highlight the immediate course of treatment to delay or suppress accelerated pathological cognitive decline associated with neurovascular dysfunction.

References

1. Jaul E, Meiron O (2017) Systemic and disease-specific risk factors in vascular dementia: Diagnosis and prevention. Front Aging Neurosci 9: 329-333.

2. Jaul E, Barron JC (2017) Age-related diseases and clinical and public health implications for the age 85-year-old and over population. Front Public Health 5: 335.

3. Custodio N, Montesinos R, Lira D, Herrera-Pérez E, Bardales Y, et al. (2017) Mixed dementia: A review of the evidence. Dement Neuropsychol 11: 364-370.

4. Gorelick PB, Scuteri A, Black SE, DeCarli C, Greenberg SM, et al. (2011) Vascular contribution to cognitive impairment and dementia: A statement for health care professionals from the American heart and stoke association. Stroke 42: 2672-2713.

5. Pan X, Zhang D, Heo JH, Park C, Li G, et al. (2022) Antihypertensive use and the risk of alzheimer's disease and related dementias among older adults in the USA. Drugs Aging 39: 875-886.

6. Nguyen TT, Ta QTH, Nguyen TKO, Nguyen TTD, Van Giau V (2020) Type 3 diabetes and its role implications in alzheimer's disease. Int J Mol Sci 21: 3165.

7. Pase MP, Beiser A, Himali JJ, Tsao C, Satizabal CL, et al. (2016) Aortic stiffness and the risk of incident mild cognitive impairment and dementia. Stroke 47: 2256-2261.

8. Li G-Y, Chen Y-Y, Lin Y-J, Chien K-L, Hsieh Y-C, et al. (2023) Ablation of atrial fibrillation and dementia risk reduction during long-term follow-up: A nationwide population-based study. Europace 25: euad109.

9. Dhana K, Evans DA, Rajan KB, Bennett DA, Morris MC (2020) Healthy lifestyle and the risk of Alzheimer dementia. Neurology 95: e374-e383.

10. Beam CR, Kaneshiro C, Jang JY, Reynolds CA, Pedersen NL, et al. (2018) Differences between women and men in incidence rates of dementia and alzheimer's disease. J Alzheimers Dis 64: 1077-1083.