Depression associated with cerebrovascular disease (CVD) is common among the elderly. Two major types are described, including poststroke depression (PSD), which occurs following a clinically apparent stroke and vascular depression (VaD) which results from silent cerebral infarctions or lacunar infarcts mainly in the subcortical regions. Although PSD and VaD have been regarded as distinctive types of depression, there appears to be a great degree of overlap between them. The case of an elderly patient with late-onset depression is presented to highlight this overlap.

Keywords: Depression, poststroke, vascular

CASE REPORT

A 62-year-old gardener, from a distant town, attended our outpatient clinic in October 2015, with complaints of crying spells and low mood following a stroke about 1 year ago. In August 2014, he had suddenly felt dizzy while working and remained unconscious for a few hours. Following this, he had the left upper limb weakness, aphasia, and difficulty in swallowing solid foods; however, these got better over the next 2–3 months. However, from December 2014, he
started to have occasional sleep disturbances and easy fatigability. Very soon after that he developed sudden, brief spells of crying aloud without any apparent reason. These crying spells were frequent and unpredictable and brought on by innocuous events or interactions. He had no control over them and was inconsolable during these episodes. They were not associated with low mood or disturbing thoughts. When these spells became increasingly troublesome and socially impairing and did not get better with the treatment he began to feel sad, which got worse with time. His sadness was worse in the mornings and was associated with reduced interest in surroundings, social withdrawal, excessive tiredness and lethargy, poor appetite and self-care, weight loss and debilitation, pains and aches, psychic and autonomic anxiety symptoms, and complete inability to work. However, there was no history of guilt, hopelessness, suicidal ideations or attempts, psychotic symptoms, hypomania/mania, or self-reported cognitive impairment. He had no past or family history of psychiatric illness and no history of hypertension, heart disease, or diabetes. He had been dependent on nicotine for 40 years but had been abstaining since the stroke. He was married with four grown-up children and had been well adjusted before his recent problems. Mental state examination revealed evidence of depression and prominent poststroke emotionalism. Beck depression inventory scores were 24 (moderate depression), but Mini-Mental State Examination scores were 26/30. Routine investigations were within normal limits except for deranged lipid profile. Psychometry revealed average IQ and memory with moderate executive dysfunction. Magnetic resonance imaging (MRI) showed the evidence of an old right middle-cerebral-artery region infarct, as well as ischemic changes in periventricular areas involving small vessels and atherosclerotic changes in both internal carotid arteries. Echo showed the ejection fraction of 45% and left ventricular systolic dysfunction. He was treated with fluoxetine, aspirin, atorvastatin, and metoprolol. He and his family were educated about his problems and management of risk factors for CVD. His depression and crying spells responded completely within 2 months, and he has remained well since then.

### DISCUSSION

Although both PSD and VaD chiefly originate from vascular brain changes, in effect, they are both conditions with complex and multiple biological and psychosocial etiologies.\(^1\)\(^,\)\(^2\)\(^,\)\(^3\) In addition, the current consensus is that both are overlapping conditions regarding prevalence, clinical features, risk factors, underlying mechanisms, and treatment response [Table 1].

Our patient’s depression was illustrative of this overlap. His major depressive episode followed stroke but also fulfilled criteria for VaD.\(^7\) Although there is probably very little to distinguish PSD from nonstroke depression, certain studies have found distinctive clinical features which may differentiate the two conditions.\(^8\)\(^-\)\(^10\) Similarly, VaD has also been postulated to be characterized by apathy, retardation, poor insight, and other features in contrast to early-onset depression in the elderly without CVD.\(^11\)\(^-\)\(^14\) Our patient clearly had a mixture of both sets of symptoms, which argue against a distinctive profile of depression in either PSD or VaD. Although our patient had only moderate

### Table 1: The overlap between poststroke depression and vascular depression

| | PSD | VaD |
|---|---|---|
| **Prevalence** | Range 25%-50%; average about 30%; and peak occurrence 2-3 months after stroke | About 35% in the elderly with late-onset depression |
| **Clinical features** | Presence of mood-reactivity, diurnal variations, anxiety, emotionalism, catastrophic reactions, anorexia, and fatigue | Older age and later age of onset. Presence of apathy, anhedonia, retardation, and lack of insight |
| | The absence of depressed mood, anhedonia, guilt feelings, and suicidal thoughts | The absence of agitation, guilt feelings, and psychotic symptoms |
| **Cognitive impairment** | Present with prominent executive function impairment | Present with prominent executive function impairment |
| **Risk factors** | Consistent evidence for stroke-severity, functional, and cognitive impairment as risk factors. Possibly female gender. Diabetes, aphasia, and crying spells in a few studies |Risk factors for atherosclerosis including smoking, hypertension, diabetes, dyslipidemia, and coronary artery disease. Functional and cognitive impairment also increase risk |
| **Etiological mechanisms** | Lesion location or size not associated with PSD. Subcortical vascular pathology may be associated with PSD. Psychosocial factors, for example, neuroticism, social isolation, and personal history of depression/anxiety associated with PSD | White matter lesions disrupting critical frontosubcortical circuits thought to be central to the genesis of VaD. Psychosocial factors proposed but not particularly explored in etiology of VaD |
| **Treatment-response** | Antidepressants effective though the number of controlled trials is limited. Relatively better treatment response regarding recovery and functional improvement. Poststroke emotionalism also responds to antidepressants | Usual treatment consists of antidepressants and management of risk factors, but relatively poorer response. Cognitive impairment, white matter lesions, and vascular risk factors associated with poorer outcome |

PSD – Poststroke depression; VaD – Vascular depression
executive dysfunction, the association between cognitive impairment and principally executive dysfunction has been well established in both conditions.\textsuperscript{[1-4]} His MRI showed a localized infarct as well as evidence of subcortical ischemia and CVD. Such mixed pictures with evidence of both infarctions and vascular lesions on the MRI are not unusual in patients with PSD.\textsuperscript{[5]} Although he mostly had risk factors and features suggestive of atherosclerosis, functional impairment which is consistently associated with both PSD and VaD was also present.\textsuperscript{[2,10]} Finally, the response to antidepressant treatment was more akin to that found in PSD than VaD where the outcome is generally poorer.\textsuperscript{[2,4]} Our patient’s presentation, therefore, endorsed the current consensus that PSD is a distinct subtype of VaD and that a single, localized cerebral infarct may interact with slowly accumulating subcortical vascular brain pathology to result in depression in immediate aftermath of a stroke.\textsuperscript{[1,2,5]} This overlap between PSD and VaD has important implications not only for understanding the etiopathogenesis of depression in these conditions but also for the assessment and treatment of patients with these overlapping disorders.

Declaration of patient consent
The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest
There are no conflicts of interest.

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