Introduction

Cerebral Autosomal Dominant Arteriopathy with Subcortical Infarcts and Leucoencephalopathy (CADASIL) is an uncommon cause of inherited stroke and dementia and is increasingly described entity but Cerebral Autosomal Recessive Arteriopathy with Subcortical Infarcts and Leucoencephalopathy (CARASIL) is a very rare entity and more commonly described from Japan. CARASIL has some unique clinical features; consanguinity is common in affected kindreds, intervertebral disk disease, spine deformity along with diffuse alopecia which develops after appearance of neurological manifestations are peculiar to CARASIL. Recently we came across a case of young onset stroke almost fulfilling the criterion of CARASIL. To the best of our knowledge, this could be the first case to be reported from India.

Case Report

A 46 year right handed non hypertensive non diabetic male was admitted with history of sudden onset of right sided hemiparesis, difficulty in speech since 10 years, which did not recover completely. In addition to this, he also had similar episodes recurring over next 3-4 years (on both sides). He had been experiencing pain in both knee joints and low backache recurring over next 3-4 years (on both sides). He had become unsteady gradually. His family members noticed emotional instability, mood changes progressing gradually. He also had urinary incontinence and could not walk and became bedridden. His parents were first cousins. Our patient had 2 sisters and one brother but their medical records were not available. Physical examination revealed normal blood pressure and heart rate. Neurological examination revealed mild cognitive impairment (mini mental status score of 23). Other findings were pseudobulbar palsy, spasticity, bilateral pyramidal signs, upper motor neuron facial paresis and 2/5 (MRC grade) power on both sides. He had dysaesthesia on left side.

Investigations revealed normal hemogram, blood biochemistry and normal serum lactate levels. Work up for collagen vascular disease was negative. Serum cortisol levels were normal. CSF examination findings were within normal limits. His radiographs of both knee joints showed severe osteoarthritic changes. MRI of brain revealed confluent involvement of subcortical white matter (Figure 1), external capsule and basal ganglia, midbrain (Figure 2) and pons (Figure 2). MR imaging of lumbar spine revealed (Figure 3) severe spondylosis and degenerative changes with disc dessication and bulges. MR brain angiography did not show significant changes.

On the basis of history of recurrent stroke in young age, presence of diffuse alopecia, history of consanguinity in parents, suggesting autosomal recessive pattern of inheritance, presence of severe low back pain, knee joints with typical radiographic features and neuroimaging findings, he was diagnosed as a case of CARASIL. Other possibilities like demyelinating disease, Binswanger’s (absence of history of hypertension), toxicological (normal toxicological screen) were excluded on the basis of history and investigation.

Discussion

Stroke is a leading cause of long term neurological disability. Apart from conventional vascular risk factors for stroke, genetic factors are also significant. Monogenic (single gene) disorders may account for approximately 1 % of all ischemic stroke and include conditions like CADASIL, CARASIL, hereditary endotheliopathy, retinopathy, nephropathy and stroke (HERNS). Others are sickle cell and Fabry’s disease. CARASIL was first described in 1976 under the “familial unusual encephalopathy of Binswanger’s type without hypertension”. To date, total 17 cases reported, most of which are from Japan. The disease has age of onset 0 to 44 years; male to female ratio is 7.5:1. Half of patients have episode of stroke while some have gradual impairment of brain functions, especially higher mental functions. Brainstem dysfunction including vestibular symptoms, ophthalmoplegia are also seen occasionally. Severe spondylitis deformans, alopecia, kyphosis, elbow deformities, ossification of intraspinal canal ligaments are known.

Autopsy studies of brain of CARASIL have shown extensive white matter degeneration, severe arteriosclerosis of small penetrating arteries. PAS (Periodic Acid Schiff) positive reaction and GOM (granular osmiophilic material) of affected vessels seen in CADASIL has not been observed in CARASIL. CARASIL has been linked to mutation in the HTRA 1 gene on chromosome 10q.

Magnetic resonance imaging is crucial tool for supporting...
the diagnosis, along with spondylitic changes in lumbar spine in addition to genetic analysis. Thus CARASIL is a distinct separate hereditary cerebrovascular disease with extra cranial symptoms.

We have reported this case to increase awareness for correct diagnosis of CARASIL based on clinical symptoms, radiological

findings and screen susceptible family members and advise genetic testing wherever feasible.

References
1. A Panagarariya, Bhwaba Sharma, Shubhakran, CADASIL in a family from north west India. JAPI 2004;52:580-581.