

Fazekas Leukoariaiosis: A Rare Case Report

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ABSTRACT

Leukoariaiosis is a particular abnormal change in appearance of white matter near the lateral ventricles. It is often seen in aged individuals, but sometimes in young adults. It increases the risk of stroke, dementia and cognitive impairment. On MRI, leukoariaiosis changes appear as white matter hyper intensities (WMHs). A case presenting to the Pediatric outpatient clinic of a teaching tertiary care hospital is reported here.

Key words: White Matter Hyperintensities, Endothelial Dysfunction, Stroke, Leukoariaiosis.

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CASE REPORT

An apparently normal 13 year old obese boy presented to the Pediatric outpatient clinic complaining of recurrent headache since the last 5 months. His mother also complained that since the onset of headache his school performance had decreased. The boy studied in 9th standard and had been doing fairly well before that. Previously during the course of illness, he was seen by many physicians and was advised various NSAIDs and ophthalmological checkups. There was no history of trauma. The child did not suffer from diabetes or hypertension. There was no significant history among the family members as well. On examination, the child was apparently normal with no significant findings on systemic examination. His BP was 100/60 mmHg. Routine laboratory investigations were within normal limits. A 2D MRI Brain was then done which showed Punctate T2 and FLAIR hyperintensities scattered in bilateral subcortical as well as deep white matter of both the cerebral hemispheres; suggestive of Fazekas grade I leukoariaiosis. He was then started on oral NSAIDs and has been doing well on follow up.

DISCUSSION

Leukoariaiosis is a particular abnormal change in appearance of white matter near the lateral ventricles. It is often seen in aged individuals, but sometimes in young adults.¹ On MRI, leukoariaiosis changes appear as white matter hyper intensities (WMHs).^{2,3} On CT scans, leukoariaiosis appears as hypo dense peri ventricular white-matter lesions.⁴

White matter hyperintensities can be caused by a variety of factors including ischemia, micro-hemorrhages, gliosis, damage to small blood vessel walls, breaches of the barrier between the cerebrospinal fluid and the brain, or loss and deformation of the myelin sheath.⁵ Multiple small vessel infarcts in the subcortical white matter can cause the condition, often the result of chronic hypertension leading to lipohyalinosis of the small vessels. Patients may develop subcortical dementia syndrome.⁶

The Fazekas scale is used to simply quantify the amount of white matter T2 hyperintense lesions usually attributed to chronic small vessel ischaemia. It was proposed by Fazekas et al. in 1987 and it remains the most widely used system for describing white matter disease severity. The scale divides the white matter in periventricular and deep white matter, and each is given a grade depending on the size and confluence of lesions.⁷

Initially, Leukoariaiosis is asymptomatic. Patients may notice headache, dizziness, and tinnitus. In more advanced stages, patients may have muscle pain, weakness, sleep problems, fatigue, gait, and stance disorders along with the above-mentioned problems. In the advanced stages, some visible changes in cognitive functioning may be noticed. Patients may have problems in balancing, thinking, prioritizing, and memorizing as well. Consequences of Leukoariaiosis are many. Cognitive decline, based on the involvement of white matter communication channels, mainly affects executive functioning (planning, prioritizing, risk assessment etc.) processing speed, and attention.

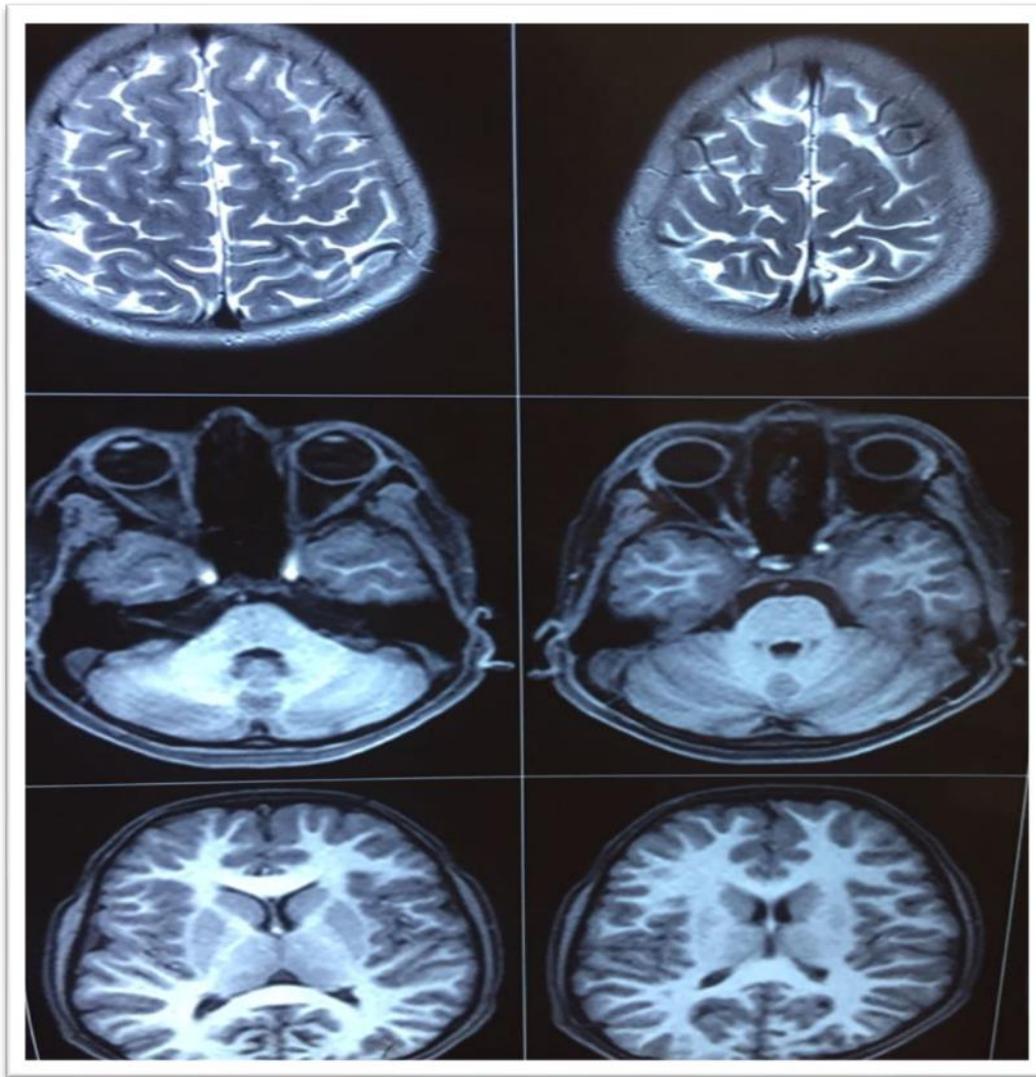


Figure 1: 2D MRI Brain

Grade	Periventricular white matter	Deep white matter
0	Absent	Absent
1	“Caps” or Pencil-thin lining	Punctate foci
2	Smooth “halo”	Beginning confluence
3	Irregular signal extending into deep white matter	Large confluent areas

Gait and balance disturbances are another hallmark of leukoariaiosis, again the result of white matter damage. Depression is increasingly common as people age; now there is solid evidence to suggest that growing areas of leukoariaiosis may be involved.^{8,9} Stroke risk is clearly affected by the presence of leukoariaiosis. In people who have had a “minor” warning, such as a transient ischemic attack (TIA) or a non-disabling stroke, the presence of leukoariaiosis significantly increases their chances of having a stroke.

As leukoariaiosis occurs due to a multiple reasons, treatment for leukoariaiosis and the cause of the disease like stroke, dementia, hypertension, etc. are necessary. In addition, Medicines that inhibit phosphodiesterase are prescribed for treating Leukoariaiosis. The vasodilating feature of these medicines helps to increase the blood flow in the affected parts of the brain. Medicines that have metabolism enhancing capacity are also

prescribed. Prevention of Leukoariaiosis includes Increased physical activities, sports, exercise, etc. certain doses of vitamin B are used as a therapeutic measure to reduce the risk of homocysteine. Reducing hypertension, platelet dysfunction, and metabolic syndrome, etc. can also reduce the risk of leukoariaiosis. Change in lifestyle, less fatty foods, quitting smoking, and alcohol are other important factors in reducing the risk of leukoariaiosis.

CONCLUSION

Unidentified bright objects, formally known as leukoariaiosis, or white matter hyperintensities, are early warning signs of ongoing chronic brain damage.³ It’s almost like having a stroke in ultra-slow motion. No one even knew of the existence of leukoariaiosis until modern scanning technology detected it. Now we recognize that leukoariaiosis is both widespread and dangerous, signaling the

presence of insidious disease in the brain's smallest blood vessels. Modern research has shown that it can bring many other problems like stroke, dementia and cognitive dysfunctions. On the contrary, many of these disorders can trigger leukoariaiosis. Some medicinal remedies can be applied to prevent further proliferation of the disease, but the specific treatment procedure is not available for this problem till now. Experts, opine that certain preventive steps could be adopted to reduce the risk of Leukoariaiosis to some extent, but everybody needs to have primary awareness regarding the disease and its symptoms.

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