



Hot Cross Bun Sign

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Received Date:
13-January -2026
Revised Date:
22-January-2026
Accepted Date:
24-January-2026
Published Date:
30-January-2026

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Citation:

Somarajan Anandan, Sajeesh
Rajendran, Anandhu Suresh, Joesni
Joy (2026). Hot Cross Bun Sign. *Euro
J Case Rep Clin Imag.* 2026; January,
e21,1-4.

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Case Presentation:

A 67-year-old lady presented with progressive swaying during walking and dysarthria of five years' duration. She also noted bilateral upper limb incoordination for the last 2 years. She had occasional falls and urge incontinence. There was no history of any diplopia, dysphagia, weakness, rest tremor or sensory symptoms. There was no history of syncope but had constipation. There was no family history of similar illness. On examination her vitals were normal. Mini Mental Status Examination showed a score of 28 out of 30. Cranial nerve examination showed gaze evoked nystagmus and scanning dysarthria. She had hypomimia with mild bilateral appendicular rigidity. She had normal power in upper and lower limbs with normal deep tendon reflexes. Plantars were flexor. She had bilateral finger nose incoordination and gait ataxia with mild postural instability. Autonomic system examination showed a postural drop of blood pressure of 40/20 mm of Hg. She was treated with carbidopa-levodopa combination without much improvement. In view of symmetrical parkinsonism with poor L-dopa response, bilateral cerebellar signs and postural hypotension, a diagnosis of Multiple system atrophy-cerebellar type (MSA-C) was made and MRI brain was taken. Brain MRI axial T2 weighted images showed Hot Cross Bun Sign (HCBS) and vertical T2 hyperintensity in Pons. There was corresponding hypointensity in T1 weighted images Figure (1 to 4).

Keywords: Hot cross bun sign, Multiple system atrophy, Pons, Cruciform hyperintensity, Vertical linear hyperintensity

Multiple system atrophy (MSA) is a neurodegenerative disorder characterized by parkinsonism, cerebellar ataxia, and autonomic dysfunction. Early stages of MSA-cerebellar type (MSA-C) is difficult to distinguish from spinocerebellar ataxias. Various MRI signs like Hot cross bun sign (HCBS), Putaminal slit sign, middle cerebellar peduncle sign (MCP sign) and inferior cerebellar peduncle sign (ICP sign) are described in MSA with variable sensitivity and specificity [1].

The hot cross bun sign (HCBS) is a radiologic finding describing a cruciform T2 hyperintense signal on axial MRI of the pons, classically described in MSA. The underlying pathophysiological process is considered to be atrophy of pontine neurons and transverse pontocerebellar fibers with sparing pontine tegmentum and corticospinal tracts [2]. It is also reported in patients with spinocerebellar ataxia (SCA 1, 2, 3, 6, 7, 8, 10, 17, 23, 31, 34, 42), progressive multifocal leukoencephalopathy, paraneoplastic cerebellar degeneration from a burned-out testicular tumor, leptomeningeal metastases from breast cancer, bilateral middle cerebellar peduncle infarction, cerebrotendinous xanthomatosis, fragile X tremor ataxia syndrome (FXTAS) and variant Creutzfeldt-Jakob disease [3]. HCBS is graded as Grade 0 (No signal changes), Grade 1 (vertical T2 hyperintensity in ventral pons) and Grade 2 (cruciform hyperintensity in pons) in axial T2 weighted MRI brain images [4]. It is reported that the HCBS had a high specificity of 98% to 99% and a high positive predictive value of 94% to 99% for MSA-C, but the sensitivity was only 45% to 68%. Some of the immune mediated cerebellar ataxia like anti-Homer 3, anti-Ri and anti Kelch like protein 11 can mimic the MSA-C phenotype and do not necessarily have a rapid progression [5]. HCBS also has been described in medulla in adult-onset Alexander's disease [6].



Figure 1: MRI brain T1 axial image showing cruciform hypointensity in pons and cerebellar atrophy



Figure 2: MRI brain T1 axial image showing vertical linear hypointensity in pons

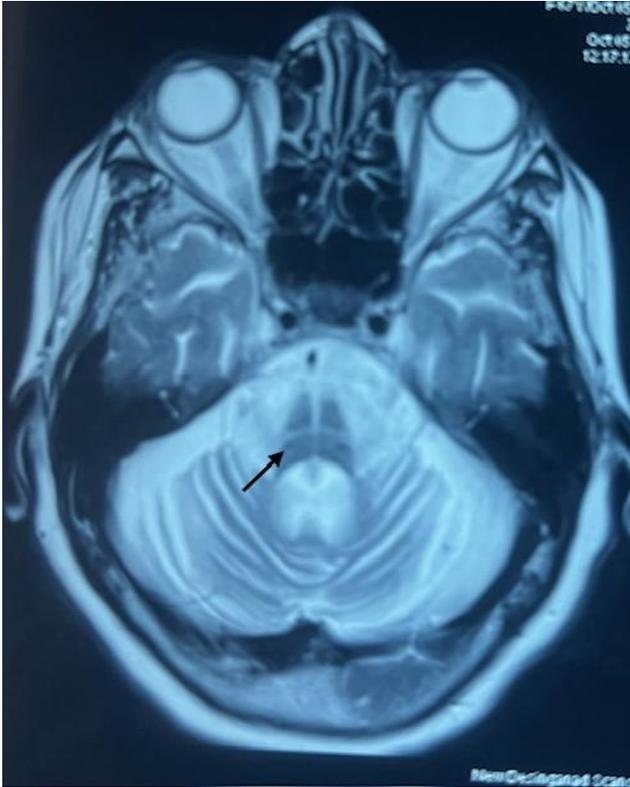


Figure 3: MRI brain T2 axial image showing Hot Cross Bun sign

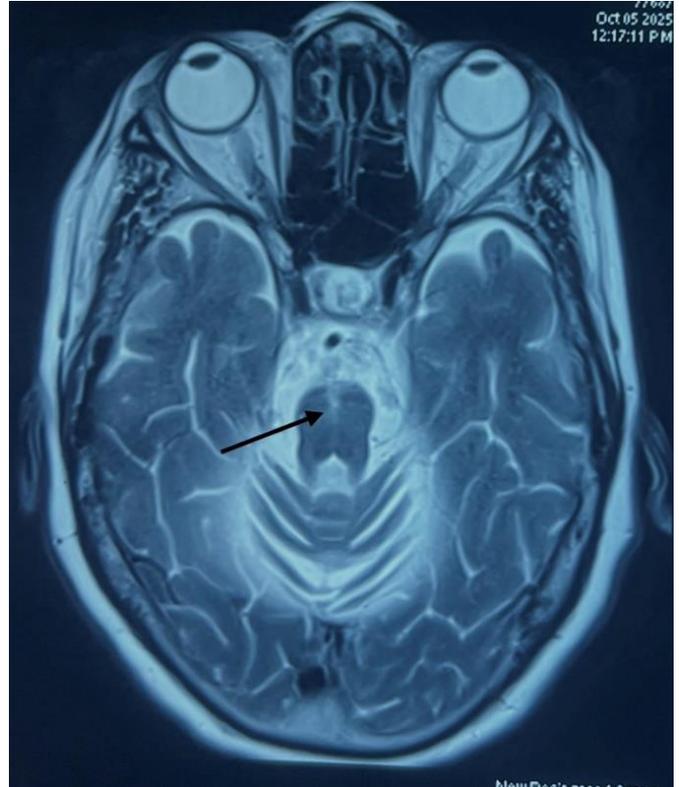


Figure 4: MRI brain axial T2 image showing vertical linear hyperintensity in pons and cerebellar atrophy

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: No new data were created or analyzed in this study. Data sharing is not applicable to this article.

Acknowledgments: Not applicable.

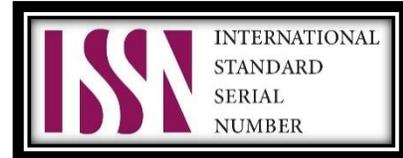
Conflicts of Interest: The authors declare no conflict of interest.

References:

1. Lim CY, Seo Y, Sohn B, Seong M, Kim ST, Hong S, Youn J, Kim EY. The Inferior Cerebellar Peduncle Sign: A Novel Imaging Marker for Differentiating Multiple System Atrophy Cerebellar Type from Spinocerebellar Ataxia. *AJNR Am J Neuroradiol.* 2025 Jun 3;46(6):1223-1230. DOI: [10.3174/ajnr.A8623](https://doi.org/10.3174/ajnr.A8623). PMID: 39674591
2. Gulati, A.; Virmani, V.; Singh, P.; Khandelwal, N. The hot cross bun sign. *Neurology India* 57(1):p 104-105, Jan–Feb 2009. | DOI: [10.4103/0028-3886.48790](https://doi.org/10.4103/0028-3886.48790)
3. Prasad S, Rossi M. The Hot Cross Bun Sign: A Journey Across Etiologies. *Mov*

Disord Clin Pract. 2022 Oct 21;9(8):1018-1020. DOI: 10.1002/mdc3.13596.

4. Sugiyama A, Yokota H, Yamanaka Y, Mukai H, Yamamoto T, Hirano S, Koide K, Ito S, Kuwabara S. Vertical pons hyperintensity and hot cross bun sign in cerebellar-type multiple system atrophy and spinocerebellar ataxia type 3. BMC Neurol. 2020 Apr 27;20(1):157. DOI: [10.1186/s12883-020-01738-9](https://doi.org/10.1186/s12883-020-01738-9). PMID: 32340608; PMCID: PMC7184719.
5. Liu M, Ren H, Lin N, Tan Y, Fan S, Guan H. The "hot cross bun sign" in patients with autoimmune cerebellar ataxia: A case report and literature review. Front Neurol. 2022 Aug 19;13:979203. DOI: [10.3389/fneur.2022.979203](https://doi.org/10.3389/fneur.2022.979203). PMID: 36062012; PMCID: PMC9437433.
6. Fang, Xing; Liang, Hui. Medullary Hot-Cross Bun Sign in Adult-Onset Alexander Disease. Neurology India 72(1):p 234, Jan–Feb 2024. | DOI: [10.4103/neurol-india.Neurol-India-D-23-00676](https://doi.org/10.4103/neurol-india.Neurol-India-D-23-00676)



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