

Supplementary Table 1. Review of the literature with WEBINO

	Age (yr)	Gender	Etiology	Location of abnormality on MRI
Inocencio et al. (1985) ¹	24	Male	Tuberculosis infection	Midbrain, pontine
Lana et al. (1990) ²	35	Female	CNS vasculitis	None
Fay et al. (1999) ³	33	Male	CNS cryptococcosis	Midbrain,
Korkmaz et al. (2002) ⁴	14	Female	CIDP	None
Flint et al. (2005) ⁵	71	Male	PSP	Midbrain
Ozer et al. (2005) ⁶	15	Male	Descending tentorial herniation secondary to trauma	Midbrain, pontine
Chen et al. (2007) ⁷	66	Male	Ischemic stroke	Midbrain, pontine
	84	Male	Ischemic stroke	Midbrain, pontine
	51	Female	Hydrocephalus, brain tumor	Pontine
	65	Male	Ischemic stroke	Midbrain, pontine
Kim et al. (2008) ⁸	78	Male	Ischemic stroke	Midbrain
Matsumoto et al. (2008) ⁹	72	Male	PSP	Midbrain
Ushio et al. (2008) ¹⁰	72	Male	PSP	Midbrain
Jacob et al. (2010) ¹¹	67	Male	Hydrocephalus secondary to subarachnoid hemorrhage	None
Sierra-Hidalgo et al. (2010) ¹²	55	Female	Ischemic stroke	Midbrain
Shinoda et al. (2011) ¹³	19	Female	NMOSD	Midbrain
Beh et al. (2012) ¹⁴	69	Male	Ischemic stroke	Midbrain, pontine
Jadhav et al. (2012) ¹⁵	41	Male	Hydrocephalus secondary to cryptococcal meningitis	None
Sakamoto et al. (2012) ¹⁶	64	Male	Ischemic stroke	Pontine
Park et al. (2013) ¹⁷	71	Female	PSP	Midbrain
Bar et al. (2014) ¹⁸	12	Female	Demyelinating inflammation	Midbrain
Chakravarthi et al. (2014) ¹⁹	64	Female	Ischemic stroke	Midbrain
Mathis et al. (2014) ²⁰	68	Male	Ischemic stroke	Pontine
Muralidhar et al. (2014) ²¹	35	Male	Toxic-metabolic condition	None
Nakajima et al. (2014) ²²	68	Male	Ischemic stroke	Midbrain, pontine
Rodriguez Calvo de Mora et al. (2014) ²³	57	Male	Ischemic stroke, neurosyphilis	Midbrain

Toufееq et al. (2014) ²⁴	13	Male	Pineal gland lesion removal	None
Agarwal et al. (2015) ²⁵	19	Female	Ischemic stroke	Midbrain, pontine
Ljevak et al. (2015) ²⁶	53	Male	Ischemic stroke	Midbrain
Man et al. (2015) ²⁷	84	Male	Ischemic stroke	Midbrain
de Souza et al. (2017) ²⁸	60	Female	PSP	Midbrain
Sajadi et al. (2017) ²⁹	38	Male	Unknown	None
Zou et al. (2017) ³⁰	70	Female	NMOSD	Midbrain
Papageorgiou et al. (2018) ³¹	65	Male	Ischemic stroke	Midbrain
Matsumoto et al. (2019) ³²	81	Male	PSP	Midbrain
Im et al. (2020) ³³	62	Female	Ischemic stroke	Pontine
Uzawa et al. (2020) ³⁴	88	Female	Ischemic stroke	Pontine
Vázquez-Justes et al. (2020) ³⁵	68	Male	Ischemic stroke	Midbrain
Yazdi et al. (2020) ³⁶	57	Male	PSP	Midbrain
Gupta et al. (2020) ³⁷	79	Male	PSP	Midbrain
Ansari et al. (2021) ³⁸	45	Female	Immune-related adverse event	None
Jo et al. (2021) ³⁹	62	Male	Ischemic stroke	Midbrain
Sinha et al. (2021) ⁴⁰	48	Female	Transtentorial herniation secondary to intracranial haemorrhage	Brainstem compression.
Petrik et al. (2021) ⁴¹	55	Male	Microhaemorrhage	Pontine
Chen (2022) ⁴²	46	Male	Demyelinating inflammation	Pontine
Wako et al. (2022) ⁴³	85	Male	Ischemic stroke	Midbrain, pontine
Wang et al. (2022). ⁴⁴	55	Male	Ischemic stroke	Pontine
Sherstyuk et al. (2022) ⁴⁵	58	Male	PSP	Midbrain
Barbagallo et al. (2023) ⁴⁶	55	Female	Autoimmune inflammation	Midbrain
Kim et al. (2023) ⁴⁷	67	Male	PSP	Midbrain
Zainal Abidin et al. (2023) ⁴⁸	29	Female	MS	None

Abbreviation: CNS, central nervous system; CIDP, chronic inflammatory demyelinating polyneuropathy; MS, multiple sclerosis; NMOSD, neuromyelitis optica spectrum disorder; PSP, Progressive supranuclear palsy; WEBINO, wall-eyed bilateral internuclear ophthalmoplegia

REFERENCES

1. Inocencio FP, Ballecer R. Tuberculosis granuloma in the midbrain causing wall-eyed bilateral internuclear ophthalmoplegia (Webino). *J Clin Neuroophthalmol* 1985;5:31-5.
2. Lana MA, Moreira PR, Neves LB. Wall-eyed bilateral internuclear ophthalmoplegia (Webino syndrome) and myelopathy in pyoderma gangrenosum. *Arq Neuropsiquiatr* 1990;48:497-501.
3. Fay PM, Strominger MB. Wall-eyed bilateral internuclear ophthalmoplegia in central nervous system cryptococcosis. *J Neuroophthalmol* 1999;19:131-5.
4. Korkmaz A, Topaloglu H, Kansu T. Wall eyed bilateral internuclear ophthalmoplegia in chronic

- inflammatory demyelinating polyneuropathy. *Eur J Neurol* 2002;9:691-2.
5. Flint AC, Williams O. Bilateral internuclear ophthalmoplegia in progressive supranuclear palsy with an overriding oculoccephalic maneuver. *Mov Disord* 2005;20:1069-71.
 6. Ozer F, Mutlu A, Meral H, et al. Wall-eyed bilateral internuclear ophthalmoplegia presenting as monocular alternating nystagmus: a non-epileptic phenomenon in a case of diffuse axonal injury. *Epileptic Disord* 2005;7:53-6.
 7. Chen CM, Lin SH. Wall-eyed bilateral internuclear ophthalmoplegia from lesions at different levels in the brainstem. *J Neuroophthalmol* 2007;27:9-15.
 8. Kim JS, Jeong SH, Oh YM, et al. Teaching NeuroImage: Wall-eyed bilateral internuclear ophthalmoplegia (WEBINO) from midbrain infarction. *Neurology* 2008;70:e35.
 9. Matsumoto H, Ohminami S, Goto J, et al. Progressive supranuclear palsy with wall-eyed bilateral internuclear ophthalmoplegia syndrome. *Arch Neurol* 2008;65:827-9.
 10. Ushio M, Iwasaki S, Chihara Y, et al. Wall-eyed bilateral internuclear ophthalmoplegia in a patient with progressive supranuclear palsy. *J Neuroophthalmol* 2008;28:93-6.
 11. Jacob JT, Burns JA, Dupont SA, et al. Wall-eyed bilateral internuclear ophthalmoplegia after ruptured aneurysm. *Arch Neurol* 2010;67:636-7.
 12. Sierra-Hidalgo F, Moreno-Ramos T, Villarejo A, et al. A variant of WEBINO syndrome after top of the basilar artery stroke. *Clin Neurol Neurosurg* 2010;112:801-4.
 13. Shinoda K, Matsushita T, Furuta K, et al. Wall-eyed bilateral internuclear ophthalmoplegia (WEBINO) syndrome in a patient with neuromyelitis optica spectrum disorder and anti-aquaporin-4 antibody. *Mult Scler* 2011;17:885-7.
 14. Beh SC, Frohman EM. WEBINO and the return of the King's Speech. *J Neurol Sci* 2012;315:153-5.
 15. Jadhav AP, Prasad S. Rapid reversal of wall-eyed bilateral internuclear ophthalmoplegia. *Arch Neurol* 2012;69:405.
 16. Sakamoto Y, Kimura K, Iguchi Y, et al. A small pontine infarct on DWI as a lesion responsible for wall-eyed bilateral internuclear ophthalmoplegia syndrome. *Neurol Sci* 2012;33:121-3.
 17. Park JH, Kim YH, Lee DK. WEBINO (Walled Bilateral Internuclear Ophthalmoplegia) Syndrome in Progressive Supranuclear Palsy. *Journal of the Korean neurological association* 2013;31:50-3.
 18. Bar A, Urbine J, Bahora Y, et al. A 12-year-old African American girl with subacute bilateral ophthalmoplegia. *Semin Pediatr Neurol* 2014;21:173-6.
 19. Chakravarthi S, Kesav P, Khurana D. Wall-eyed bilateral inter nuclear ophthalmoplegia with vertical gaze palsy. *QJM* 2014;107:165.
 20. Mathis T, Ducray F, Tilikete C, et al. Pontine infarction responsible for wall-eyed bilateral internuclear ophthalmoplegia syndrome. *Neurol Clin Pract* 2014;4:524-5.
 21. Muralidhar R, Chandrasekhar CS, Ramamurthy D, et al. WEBINO after binge drinking. *J Pediatr Ophthalmol Strabismus* 2014;51:256.
 22. Nakajima N, Ueda M, Katayama Y. Brainstem infarction with wall-eyed bilateral internuclear ophthalmoplegia syndrome and vertical one-and-a-half syndrome. *J Stroke Cerebrovasc Dis* 2014;23:e291-3.
 23. Rodriguez Calvo de Mora M, Rodriguez Moreno G, Espana Contreras M. [Webino syndrome caused by meningovascular syphilis. A rare entity with an unexpected cause]. *Arch Soc Esp Oftalmol* 2014;89:199-202.

24. Toufeeq A, Dave D. Surgical management of WEBINO syndrome following pineal gland lesion removal. *Eye (Lond)* 2014;28:352-3.
25. Agarwal A, Vyas S, Banzal S, et al. Wall-eyed bilateral internuclear ophthalmoplegia. *Neurol India* 2015;63:444-6.
26. Ljevak J, Mismas A, Poljakovic Z, et al. Bilateral ptosis with wall-eyed bilateral internuclear ophthalmoplegia and vertical gaze paralysis. *Neurol Sci* 2015;36:473-5.
27. Man BL, Chi MS, Fu YP. Wall-eyed bilateral internuclear ophthalmoplegia (WEBINO) from a paramedian mesencephalic infarct. *BMJ Case Rep* 2015;2015
28. de Souza LC, de Paula Franca Resende E, Magalhaes D, et al. Wall-eyed bilateral internuclear ophthalmoplegia (WEBINO) in a patient with Richardson's syndrome - Progressive supranuclear palsy. *Parkinsonism Relat Disord* 2017;41:121-3.
29. Sajjadi M, Sonbolestan SA, Abtahi SM, et al. Transposition surgery for WEBINO. *Int Ophthalmol* 2017;37:271-4.
30. Zou Z, Chen W. Can Wernekink commissure syndrome and wall-eyed bilateral internuclear ophthalmoplegia be ascribed to neuromyelitis optica spectrum disorder? *Neurol Sci* 2017;38:2053-5.
31. Papageorgiou E, Tsironi EE, Androudi S, et al. Teaching Video NeuroImages: Pulsatile proptosis and wall-eyed bilateral internuclear ophthalmoplegia. *Neurology* 2018;90:e1542-e3.
32. Matsumoto H, Inaba T, Kakumoto T, et al. Progressive Supranuclear Palsy with Wall-Eyed Bilateral Internuclear Ophthalmoplegia Syndrome: Authors' Second Case. *Case Rep Neurol* 2019;11:205-8.
33. Im K, Ju H, Lee M, et al. A Case Report of Wall-Eyed Bilateral Internuclear Ophthalmoplegia with Bilateral Facial Palsy. *J Stroke Cerebrovasc Dis* 2020;29:105139.
34. Uzawa A, Takeda Y, Kuwabara S. Wall-Eyed Bilateral Internuclear Ophthalmoplegia by Ischemic Stroke: Case Report and Literature Review. *Neurologist* 2020;25:82-4.
35. Vázquez-Justes D, Martín-Cucó A, Gallego-Sánchez Y, et al. WEBINO syndrome (wall-eyed bilateral internuclear ophthalmoplegia) secondary to ischemic stroke, about a case. *Archivos de la Sociedad Española de Oftalmología (English Edition)* 2020;95:205-8.
36. Yazdi N, Ghamsari MR, Shoeibi A, et al. Diplopia in Progressive Supranuclear Palsy. *Mov Disord Clin Pract* 2020;7:232-3.
37. Gupta HV, Karlowski K, Whittaker TJ. Bilateral INO in PSP. *Ann Indian Acad Neurol* 2020;23:235-7.
38. Ansari J, Eltigani Mohammed Y, Ghazal-Aswad S, et al. Rare case of chemotherapy-refractory metastatic vaginal squamous cell carcinoma with complete response to concurrent pembrolizumab and radiotherapy- case report and literature review. *Gynecol Oncol Rep* 2021;38:100878.
39. Jo YS, Hong JY, Kim SY, et al. Wall-Eyed Bilateral Internuclear Ophthalmoplegia (WEBINO) in a Patient With a Unilateral Midbrain Infarction. *Neurologist* 2021;26:153-5.
40. Sinha S, Naik BB, Ghanekar J. Wall eyed bilateral internuclear ophthalmoplegia (WEBINO) syndrome as a false localising sign in intracranial haemorrhage due to snake bite. *BMJ Case Rep* 2021;14
41. Petrik S, Lambeck J, Bardutzky J. WEBINO Syndrome Caused by Bilateral Pontine Microhemorrhages. *Dtsch Arztebl Int* 2021;118:723-9.
42. Chen T. Wall-eyed bilateral internuclear ophthalmoplegia associated with etanercept. *Pract Neurol* 2022;22:71-2.
43. Wako S, Toi S, Mizuno T, et al. [A case of cardioembolic stroke with wall-eyed bilateral internuclear ophthalmoplegia (WEBINO) syndrome]. *Rinsho Shinkeigaku* 2022;62:541-5.

44. Wang T, Cao D, Han J. Case report: A variant of wall-eyed bilateral internuclear ophthalmoplegia from unilateral pons infarction. *Front Neurosci* 2022;16:974645.
45. Sherstyuk EE, Belyakova-Bodina AI, Nuzhnyi EP, et al. WEBINO Syndrome in a Patient with Progressive Supranuclear Palsy: Case Report and Literature Review. *Human Physiology* 2022;48:912-8.
46. Barbagallo M, Straumann D, Binaghi E, et al. A rare case of a wall-eyed bilateral internuclear ophthalmoplegia (WEBINO) syndrome in a patient with cutaneous lupus erythematosus after COVID-19 infection. *J Neurol* 2023;270:1224-8.
47. Kim A, Jung YJ, Yoo D, et al. Wall-Eyed Bilateral Internuclear Ophthalmoplegia Syndrome in a Patient With Progressive Supranuclear Palsy: A Case Report and Literature Review. *J Mov Disord* 2023;16:227-30.
48. Zainal Abidin N, Tuan Jaffar TN, Ahmad Tajudin LS. Wall-Eyed Bilateral Internuclear Ophthalmoplegia as an Early Presentation of Multiple Sclerosis. *Cureus* 2023;15:e36835.