ISSN: 2581-5989
PubMed - National Library of Medicine - ID: 101738774

International Journal of Dental Science and Innovative Research (IJDSIR)

IJDSIR : Dental Publication Service

Available Online at:www.ijdsir.com

Volume – 7, Issue – 1, January- 2024, Page No. :01 - 06

Meige syndrome: A review of the movement disorder

[1]Dr. Harshitha Akkinepally, MDS, Department of Oral Medicine and Radiology, Kamineni Institute of Dental Sciences, Nalgonda, Telangana

[2]Dr. Avinash Vallabhaneni, BDS, Kamineni Institute of Dental Sciences, Nalgonda, Telangana

[3]Dr. Kondoju Durga Bhavani, BDS Kamineni Institute of Dental Sciences, Nalgonda, Telangana

[4]Dr. Soppadandi Vinayasri,BDS, Kamineni Institute of Dental Sciences, Nalgonda, Telangana

[5]Dr. ChinthakuntlaSushma,BDS, Kamineni Institute of Dental Sciences, Nalgonda, Telangana

[6]Dr. Anugu Anjali, BDS, Kamineni Institute of Dental Sciences, Nalgonda, Telangana

Corresponding Author: Dr. Harshitha Akkinepally, MDS, Department of Oral Medicine and Radiology, Kamineni Institute of Dental Sciences, Nalgonda, Telangana

Citation of this Article: Dr. Harshitha Akkinepally, Dr. Avinash Vallabhaneni, Dr. Kondoju Durga Bhavani, Dr. Soppadandi Vinayasri, Dr. Chinthakuntla Sushma, Dr. Anugu Anjali, "Meige syndrome: A review of the movement disorder", IJDSIR- January - 2024, Volume –7, Issue - 1, P. No.01 – 06.

Type of Publication: Review Article

Conflicts of Interest: Nil

Abstract

Meige syndrome is a dystonic disorder involving blepharospasm and oromandibular dystonia. Henry Meige , a French neurologist in 1910 described a disorder characterized by dystonic spasm involving the majority of the facial muscles. Blepharospasm is a type of focal cranial dystonia that usually affects both of the orbicularis oculi muscles. Oromandibular dystonia (OMD) is a medical condition that causes involuntary muscle contractions in various combinations of the lower facial muscles. The muscle groups affected may include chewing, swallowing, talking (tongue or dysphonia), or lips. Although the exact etiology of the disease is unknown, genetic and environmental components have been noticed to be the root to this disease. Elderly women are predominantly affected by this disease however young cases have been reported. Family history has been proven to have a role in this disease. The currently used modes of treatment include botulinum A injections, anticholinergics, dopamine antagonists, GABA receptor agonists, antiepileptics and deep brain stimulation. Further investigations regarding the various modes of management of this disorder would improve the quality of life of the patients. This review encompasses the history, aetiology, epidemiology, investigations and treatment modalities of this movement disorder.

Keywords: Meige Syndrome, Blepharospasm, Oromandibular Dystonia

Introduction

Dystonia refers to a movement disorder that leads to involuntary contracture of muscles.

A French neurologist named Henry Meige in 1910 described a disorder characterized by dystonic spasms involving the majority of the facial muscles [1–3]. Since Meige's original description, a similar syndrome was described by Altrocci, Paulson, Marsden and Jankovic which was characterized by blepharospasm and oromandibular dystonia [4–7] This condition is called “Meige's syndrome” and “Meige syndrome”. It is often confused with ‘Meigs’ syndrome which is used to define the triad of benign ovarian tumour, hydrothorax and ascites.

Cranial dystonia can present in various ways with different clinical manifestations. It can appear as blepharospasm alone, oromandibular dystonia alone, or a combination of both, which is also known as Meige's syndrome. In some cases, the disorder may start by affecting only the eye muscles (essential blepharospasm) or the oromandibular region (oromandibular dystonia) and then spread to involve other muscles. [3,8]

Blepharospasm is a type of focal cranial dystonia that usually affects both of the orbicularis oculi muscles. When it only affects the eyes, it is known as essential blepharospasm. The most common form of blepharospasm is bilateral tonic spasms, but it can also appear as recurrent clonic spasms or eyelid apraxia, which are less common.[3]

Oromandibular dystonia (OMD) is a medical condition that causes involuntary muscle contractions in various combinations of the lower facial muscles. The muscle groups affected may include chewing, swallowing, talking (tongue or dysphonia), or lips.[6] The most common form of OMD is the one that affects the masticatory muscles, which can lead to jaw clenching, jaw opening, or jaw deviation. Although it can occur independently, OMD is typically associated with another focal dystonia that affects a contiguous body region, such as the eyes, platysma, neck (cervical dystonia), or larynx (spasmodic dysphonia). This condition can cause difficulty in chewing, talking, or swallowing.[9]

Etiology

Primary Meige Syndrome

Several studies and clinical scenarios have provoked the significance of genetic components in the generation of disease. The patients with p.Gly213Ser, or p.Ala353thr mutations have been found to have clinical manifestations of Meige syndrome. Recently *GNAL* (gene for guanine nucleotide-binding protein G, subunit alpha) mutations have been reported to cause cranial and cervical dystonia, but more evidence is needed. [10-12]

Secondary Meige's syndrome is usually caused by tardive dystonia or underlying neurological disorders. The use of neuroleptic medications has been linked to the development of tardive dystonia in the cranio-cervical musculature in 10-20% of cases, especially if the drugs have been administered for more than a year. The mechanism behind the development of Meige's syndrome after long-term use of neuroleptics is thought to be due to the blockade of dopamine receptors, which alters their function, leading to denervation supersensitivity. [13,14]

Certain other medications have also been implicated in the development of Meige's syndrome, namely, anti-emetics (metoclopramide), dopamine agonists (levodopa, bromocriptine) and rarely the atypical antipsychotics (olanzapine). [3,13,15]

Epidemiology

Meige syndrome has a varied clinical presentation. The average age of onset is in the sixth decade, but there are cases of teenage patients. Age seems to be an independent risk factor in developing Meige syndrome. [16,17,18]It has been suggested that females are more susceptible to involuntary muscle spasms due to specific estrogen receptors. The prevalence of isolated blepharospasm and craniocervicaldystonias varies widely, estimated to be between 2% to 20%.

Pathophysiology

The pathophysiology of MS is not well understood. The most widely accepted hypothesis for the development of MS involves abnormalities in the dopaminergic and cholinergic systems. [19,20] Recent studies suggest that a combination of environmental factors and genetic predisposition can cause changes in the brain that reduce cortical inhibition.[21]

Deoxyglucose metabolism in the striatum and thalamus was shown to be increased in MS by positron emission tomography, which was proposed to be related to hyperactivity in the striatum and hypothalamus [22,23]. MS is thought to develop due to damage to the brain base, causing an imbalance in dopamine receptor sensitivity.[24]

MS was also found to be associated with decreased inhibition in the cerebral cortex caused by environmental factors and genetic susceptibility. [21,19,24] Silent functional magnetic resonance imaging (MRI) has shown decreased activation of the primary motor cortex (Brodmann Area 4) and premotor cortex (Brodmann Area 6) in the mouth representing areas in MS patients having isolated BSP.[19]

The exact mechanism of the pathophysiology of oromandibular dystonia is unknown. In a study, a comparison of the “movement-related cortical potentials” (MRCPs) between 6 OMD patients and 8 normal subjects was done and it was found that MRCP amplitudes over central and parietal areas for mouth opening and lateral movements were significantly reduced compared to normal subjects, which implies that impaired cortical preparatory process for jaw movements exist in OMD. [25]

Diagnosis

The presentation pattern of Meige syndrome differs from one patient to another. Typically, it starts with the involuntary closure of one eyelid (known as unilateral blepharospasm), which later becomes bilateral. One of the most bothersome features of this syndrome is that it can take various phenotypic forms, ranging from prolonged closure of the eye to clonus of the orbicularis oculi or complete inability to open the eyes. This is a type of progressive muscle dysfunction that initially manifests as focal neurological function, either as essential blepharospasm or oromandibular dystonia, and later spreads to other muscles such as those in the neck (antecollis, retrocollis, torticollis), respiratory muscles or upper limb muscles (dystonic tremors).

The temporalis, masseter, and platysma muscles are commonly involved in oromandibular dystonia. Patients may experience involuntary lower facial and masticatory movements such as lip pursing, chewing, grimacing, jaw thrusting, opening, or closing/clenching. The risk of dystonic contractions spreading to nearby muscle groups is most common in the first year of initial symptoms, and the probability of spread lasts for the next 3 to 5 years. In patients with blepharospasm, older age-of-onset, female gender, and history of head trauma may increase the risk of spread. [21,26]

It has been suggested by studies that patients suffering from blepharospasm and Meige's syndrome are more likely to develop Parkinson's disease. This is because

basal ganglia dysfunction is common in the pathogenesis of both disorders.

[Family history of dystonia was first noted by Henry Meige in one patient and subsequently, Tolosa also reported a family history of involuntary movement disorders in 7 (out of 16) patients. [1,3] Given the close relationship between MS, BSP, OMD, and dystonia, dystonia susceptibility genes may play an important role in disease development. Mutations in torsion dystonia (DYT)1 (TOR1A encoding torsion (Tor)A, Online Mendelian Inheritance in Man [OMIM] ID: 605204) and DYT6 (THAP1 encoding THAP domain containing 1, OMIM ID: 609520) often affect the craniocervical muscle and may contribute to the pathophysiology of MS. [27-29]

Investigations

A thorough history and physical examination should be followed by facial electromyography to measure the muscle response and to detect abnormality in nerve-to-muscle signal transmission, MRI/CT brain to rule out the stroke or any other brain lesion, serum SSA/SSB level, serum copper and ceruloplasmin level and Beck's depression inventory.[19]

Management

Botulinum A(BoNT) injection is presently the most preferred treatment because of its few side effects and high efficacy. However, the disadvantages include ptosis, lagophthalmos, dry eyes and diplopia in BSP patients. Chewing weakness, dysphagia, dysarthria, and dry mouth are common side effects of treating OMD with Botulinum A injection.[30]

A wide variety of medications including anticholinergics (e.g., trihexyphenidyl), dopamine antagonists (e.g., tiapride, tetrabenazine), GABA receptor agonists (e.g., benzodiazepines, baclofen). Antiepileptics (e.g., valproic acid), and several psychoactive drugs are used although long-term use of psychoactive drugs can cause eyelid spasming that is more often associated with the use of typical antipsychotics. Still, worsening of blepharospasm has been reported with the use of olanzapine. Eszopiclone and nitrazepam could alleviate the BSP by reacting at those specific subunits (omega-1 and omega-2) of the GABA receptor complex. [31] Some case reports found that zolpidem is effective in such patients as it is highly specific for a GABA omega-1 receptor. [32, 33]

Surgical treatment is an option for patients who are unresponsive to the conventional drugs used to treat MS, BSP, and OMD. Partial resection of the periorbital muscle resulted in long-term improvement; however, this is not the favoured therapeutic strategy owing to postoperative complications such as inflammation, aesthetic issues, hematoma, and exposure keratitis among others and the efficacy of BoNT. [34-36]

Deep brain stimulation of the globus pallidus internal and subthalamic nucleus was effective in patients with medically refractory MS, including those exhibiting severe preoperative symptoms. [37]

Differential diagnosis

Myoclonus-dystonia syndrome, Psychogenic cranio cervical dystonia, and progressive supranuclear palsy can be considered a differential diagnosis for this disorder.

Conclusion

MS is a complex dystonia that includes BSP and OMD. Due to its low incidence, possible genetic heterogeneity, and late age of onset, it is difficult to obtain complete case data in families and, consequently, to identify genetic markers and susceptibility genes. Currently, not many treatment modalities exist for Meige syndrome. Botulinum A(BoNT) injection is the most feasible approach to treating this disease currently. Deep brain stimulation has been relied upon in cases of patients

unresponsive to conventional drugs. There is an immense necessity for research on the genomics of the disease with an emphasis on the disease markers and therapeutic targets thereby enhancing the quality of life of the patients with this disease.

References

1. H. Meige, Les convulsions de la face: uneformeclinique de convulsion faciale, bilaterale et mediane, Rev. Neurol. (Paris) 10 (1910) 437–443.
2. Tolosa ES, Klawans HL. Meiges disease: a clinical form of facial convulsion, bilateral and medial. Arch Neurol. 1979;36(10):635-637
3. Tolosa ES. Clinical features of Meige's disease (idiopathic orofacial dystonia): a report of 17 cases. Arch Neurol. 1981;38(3):147-151
4. Altrocchi PH. Spontaneous oral-facial dyskinesia. Arch Neurol. 1972;26(6):506-51
5. Paulson GW. Meige's syndrome. Dyskinesia of the eyelids and facial muscles. Geriatrics. 1972;27(8):69-73
6. Marsden CD. Blepharospasm-oromandibular dystonia syndrome (Brueghel's syndrome). A variant of adult-onset torsion dystonia? J NeurolNeurosurg Psychiatry. 1976;39(12):1204-1209.
7. Jankovic J, Orman J. Blepharospasm: demographic and clinical survey of 250 patients. Ann Ophthalmol. 1984;16(4):371-376
8. LeDoux MS. Meige syndrome: what's in a name?. Parkinsonism RelatDisord. 2009;15(7):483-489
9. Gonzalez-Alegre P, Schneider RL, Hoffman H. Clinical, Etiological, and Therapeutic Features of Jaw-opening and Jaw-closing Oromandibular Dystonias: A Decade of Experience at a Single Treatment Center. Tremor Other Hyperkinet Mov (N Y). 2014;4:231
10. Pedrero-Escalas MF, García-López I, Santiago-Pérez S, Vivancos F, Gavilán J. Clinical experience with patients with spasmodic dysphonia and primary Meige syndrome. Experienciaclínicaenpacientes con síndrome de Meige primario y disfoníaespasmódica. Acta Otorrinolaringol Esp (Engl Ed). 2019;70(1):1-5.
11. Jochim A, Li Y, Gora-Stahlberg G, et al. She altered functional connectivity in blepharospasm/orofacial dystonia. Brain Behav. 2017;8(1):e00894.
12. Horisawa S, Ochiai T, Goto S, Nakajima T, Takeda N, Kawamata T, Taira T. Long-term outcome of pallidal stimulation for Meige syndrome. J Neurosurg. 2018 Jan 19;130(1):84-89.
13. Tolosa E, Martí MJ. Blepharospasm-oromandibular dystonia syndrome (Meige's syndrome): clinical aspects. Adv Neurol. 1988;49:73-84
14. J. DeVeaugh-Geiss, Clinical changes in tardive dyskinesia during long term follow up, in: M.E. Wolf, A.D. Mosina (Eds.), Tardive Dyskinesia: Biological Mechanisms and Clinical Aspects, American Psychiatric Press, Washington, DC 1988, pp. 89–105.
15. Jankovic J. Drug-induced and other orofacial-cervical dyskinesias. Ann Intern Med. 1981;94(6):788-793.
16. E.S. Tolosa, H.L. Klawans, Meige's disease. A clinical form of facial convulsion bilateral and medial, Arch. Neurol. 36 (1979) 635–637.
17. Jankovic J, Orman J. Blepharospasm: demographic and clinical survey of 250 patients. Ann Ophthalmol. 1984;16(4):371-376.
18. LeDoux MS. Meige syndrome: what's in a name?. Parkinsonism RelatDisord. 2009;15(7):483-489

19. Jahngir MU, Ameer MA, Patel BC. Meige Syndrome. In: StatPearls. Treasure Island (FL): StatPearls Publishing; August 8, 2023.
20. Ribot B, Aupy J, Vidailhet M, et al. Dystonia and dopamine: From phenomenology to pathophysiology [published correction appears in Prog Neurobiol. 2020 Jan 9;:101745]. Prog Neurobiol. 2019;182:101678.
21. Pandey S, Sharma S. Meige's syndrome: History, epidemiology, clinical features, pathogenesis and treatment. J Neurol Sci. 2017;372:162-170
22. Nutt JG, Hammerstad JP. Blepharospasm and oromandibular dystonia (Meige's syndrome) in sisters. Ann Neurol. 1981;9(2):189-191
23. Casey DE. Pharmacology of blepharospasm-oromandibular dystonia syndrome. Neurology. 1980;30(7 Pt 1):690-695
24. Hallett M. Blepharospasm: recent advances. Neurology. 2002;59(9):1306-1312.
25. Yoshida K, Kaji R, Kohara N, et al. Movement-related cortical potentials before jaw excursions in oromandibular dystonia. Mov Disord. 2003;18(1):94-100
26. Broussolle E, Laurencin C, Bernard E, Thobois S, Danaila T, Krack P. Early Illustrations of GesteAntagoniste in Cervical and Generalized Dystonia. Tremor Other Hyperkinet Mov (N Y). 2015;5:332.
27. Bressman SB, Sabatti C, Raymond D, et al. The DYT1 phenotype and guidelines for diagnostic testing. Neurology. 2000;54(9):1746-1752
28. Bressman SB, Raymond D, Fuchs T, Heiman GA, Ozelius LJ, Saunders-Pullman R. Mutations in THAP1 (DYT6) in early-onset dystonia: a genetic screening study. Lancet Neurol. 2009;8(5):441-446
29. Makino S, Kaji R, Ando S, et al. Reduced neuron-specific expression of the TAF1 gene is associated with X-linked dystonia-parkinsonism. Am J Hum Genet. 2007;80(3):393-406.
30. Hassell TJW, Charles D. Treatment of Blepharospasm and Oromandibular Dystonia with Botulinum Toxins. Toxins (Basel). 2020;12(4):269.
31. Zhao S, Zhang Y, Xu L, Wei L, Chen W. A Case Report of Psychoactive Drugs Aggravating and Alleviating Meige Syndrome. Shanghai Arch Psychiatry. 2016;28(4):222-226.
32. An JY, Kim JS, Kim YI, Lee KS. Successful treatment of the Meige syndrome with oral zolpidem monotherapy. Mov Disord. 2008;23(11):1619-1621.
33. Miyazaki Y, Sako W, Asanuma K, Izumi Y, Miki T, Kaji R. Efficacy of zolpidem for dystonia: a study among different subtypes. Front Neurol. 2012;3:58
34. Inoue N, Nagahiro S, Kaji R, Goto S. Long-term suppression of Meige syndrome after pallidal stimulation: a 10-year follow-up study. Mov Disord. 2010;25(11):1756-1758.
35. Coscarelli JM. Essential blepharospasm. Semin Ophthalmol. 2010;25(3):104-108
36. León-Sarmiento FE, Gutiérrez C, Bayona-Prieto J. Neurologíafuncional del blefaroespasmo [Functional neurology of blepharospasm]. Medicina (B Aires). 2008;68(4):318-324