

Vertigo in Systemic Lupus Erythematosus: A Case Report

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ABSTRACT

Introduction: Systemic lupus erythematosus (SLE) is a chronic inflammatory disease with multiorgan involvement based on an autoimmune process. SLE, although rare, is associated with comorbid vertigo. Vertigo in SLE is caused by a disturbance in the balance system in the inner ear. Few journals discuss SLE related to vertigo. We will report a case SLE with complaints of recurrent vertigo.

Case: A-37-year-old woman came with complaints of recurrent vertigo since 1 day ago with a duration of about 15 minutes associated with nausea, vomiting and nystagmus. Patient did not complain tinnitus or hearing disorders. The patient has been diagnosed as SLE since two years ago. The physical examination showed normal and Neuro-otological examination revealed nystagmus horizontal unidirectional, negative skew deviation test, positive Head Impulse Test (HIT)

Conclusion: Patients with a diagnosis of SLE can find comorbid peripheral vestibular disorders such as vertigo where there is an antibody mechanism that can damage the inner ear. Treatment of audiovestibular symptoms is usually strongly associated with systemic conditions and in patients with vertigo used betahistine to treatment.

Keywords: SLE, Inner Ear, Vertigo

INTRODUCTION

Systemic Lupus Erythematosus (SLE) is a chronic multisystem inflammatory disease with multiorgan involvement due to an autoimmune process characterized by the production of autoantibodies against

nucleic acids, proteins, and erythrocytes.(1–4). The clinical manifestations of SLE are very broad, including the skin and mucosa, joints, blood, heart, lungs, kidneys, central nervous system (CNS), immune system, and ears. In the ear it causes sensorineural hearing loss, tinnitus, and vertigo.(5)

The incidence of SLE is 12.5-39.0 per 100,000 people in the general population. The incidence of SLE is higher in women (82%-96%) than in men (4% - 18%), and is two to three times more common in people of African and Asian descent than in Europeans and onset is most common between the ages of 20 and 18. 39 years.(4,5) The pathogenesis of SLE includes genetic, hormonal, environmental factors (infection, ultraviolet (UV), drug factors) and excessive production of anti-nuclear antibodies (ANA), such as dsDNA, ssDNA, Sm, RNP, Ro, La and Ku.(3,5) Patients with SLE can suffer from a range of comorbidities including infection, arteriosclerosis, coronary arteriopathy, stroke, osteoporosis, bone avascular necrosis, sensorineural hearing loss (SNHL) and vertigo. (1,6)

Vertigo is a sensation of body movement when the body is not moving, which is not in accordance with normal head movements where the most common cause is an otologic disorder caused by dysfunction of the rotational speed of the inner ear sensor and semicircular canal. (7,8) Vertigo in SLE is an uncommon symptom, but the incidence is likely to be higher than expected. There are only a

few article describing vertigo in SLE.(2) Few authors have described vertigo in patients with SLE. In all these cases, vertigo symptoms were always associated with SNHL or tinnitus.(9) In this article, we report a case of vertigo in SLE.

CASE

A-37-year-old woman came with complaints of recurrent vertigo since 1 day ago with a duration of about 15 minutes associated with nausea, vomiting and nystagmus. Patient did not complain tinnitus or hearing disorders. The patient has been diagnosed as SLE since two years ago. The

physical examination showed normal and Neuro-otological examination revealed nystagmus horizontal unidirectional, negative skew deviation test, positive Head Impulse Test (HIT). Laboratory examination revealed hemoglobin 11.2gr/dl, white blood cells $7.23 \times 10^3/\text{ul}$, HCT 33.1% platelets $111 \times 10^3/\text{ul}$, uric acid 5.9mg/dl, urea 16mg/dl, creatinine 0.84mg /dl C3 74.2mg/dl C4 65.5mg/dl with ANA positivity and high level anti double stranded DNA (anti dsDNA). MRI examination of the head with contrast obtained normal results

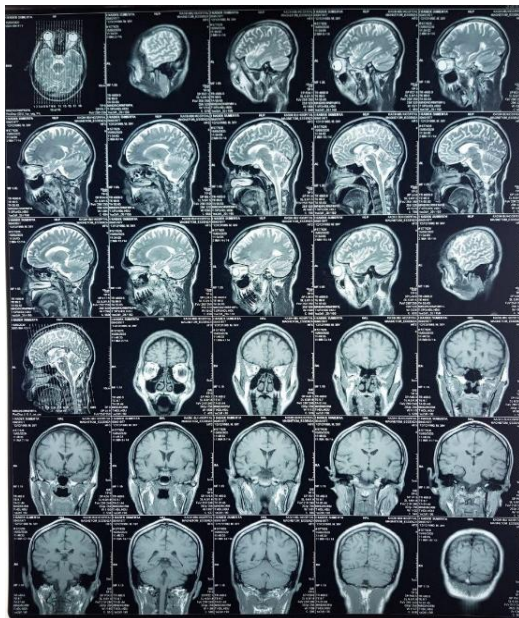


Figure 1

Figure 1 MRI of the head view axial shown normal

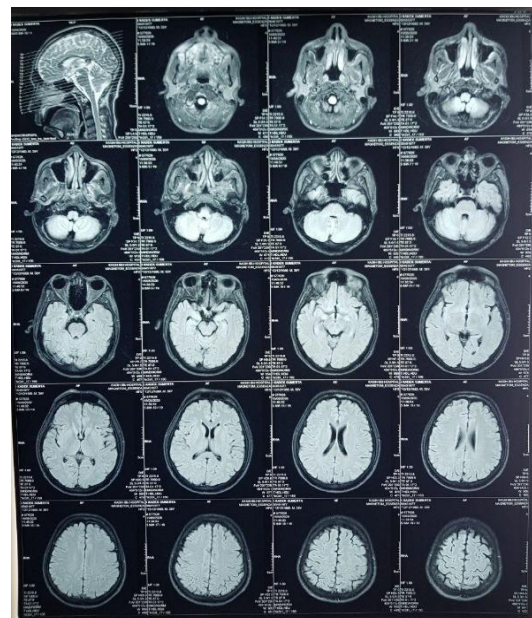


Figure 2

Figure 2 MRI of the head view sagittal and corona shown normal

DISCUSSION

Systemic lupus erythematosus (SLE) is a chronic inflammatory disease with multiorgan involvement due to an autoimmune process.(1) The diagnosis of lupus is based on criteria developed by the American Rheumatism Association and at least four of the following are required for a positive diagnosis of lupus: malar rash, discoid rash, photosensitivity, oral ulcers, serositis, arthritis, renal impairment, neurological disorders, hematologic disorders, immunology and antinuclear antibodies. From the percentage of cases

obtained SLE patients with complaints of vertigo, although the cases are rare but the probability of occurrence is more than expected. In the Karatas study, 2017 found as many as 4 people (14%) vertigo patients in patients with SLE.(2) The study of Batuecas et al, 2013 described 89 patients with a diagnosis of SLE, of which 21 patients experienced vertigo where 8 (9%) vertigo patients had a history of peripheral vertigo.(1) In Maciaszczy's 2011 study, it was reported that the most frequently reported symptom in SLE subjects was vertigo as many as 25 patients.(5) Several

authors have described vertigo in patients with SLE, and in all cases this symptom was associated with SNHL or tinnitus. (4) Liao et al, 2003 report an 11-year-old boy with SLE with fever, headache, and severe vertigo with bilateral vertical nystagmus.

Immune-mediated audiovestibular disorders have been extensively studied in the last 20 years.(2) Autoimmunity can affect the inner ear in two ways, either as an isolated primary immune-mediated inner ear disorder or as part of a systemic autoimmune disease affecting the inner ear, and it is defined as secondary autoimmune inner ear disease.(9,10) Stadio et al, 2017 explained the correlation SLE with vertigo by several mechanisms antibodies can damage the inner ear, firstly the attack of humoral-type antibodies on the inner ear antigens, secondly cell-mediated cytotoxic damage to cochlear and vestibular hair cells, and thirdly deposition of immune

complexes in microvessels of the ear. the inside part(4). In this case patient got nystagmus horizontal unidirectional, negative skew deviation test and positive Head Impulse Test (HIT). This indicates that a peripheral type of vestibular disorder is obtained. This is in accordance with the presence of disturbances in the inner ear in the patient SLE. In patients with a diagnosis of autoimmune systemic disease, treatment of audiovestibular symptoms is usually strongly associated with the systemic condition. In Vertigo, betahistine, a strong antagonist of histamine H3 receptors and weak agonists of histamine H1 receptors, increases inner ear vascularity. Additional therapeutic approaches include metoclopramide and antidepressant drugs (D1 receptor blockers) that act on central function to reduce the sensation of vertigo, nausea, and gastrointestinal symptoms.(11)

Table 1. Common causes of recurrent attacks of vertigo (12)

	Clinical history (in addition to vertigo, nausea, and vomiting)	Examination (between attacks)	Management (In addition to treatment of symptoms)
Meniere's syndrome	Fluctuating hearing loss, ear fullness, roaring tinnitus, possible sudden falling spells (otolithic crises)	Low-frequency hearing loss (unilateral in most cases)	Low-salt diet, diuretic, surgery for intractable cases
Autoimmune inner-ear disease	Fluctuating or slowly progressive hearing loss, possible systemic symptoms of autoimmune disease	Hearing loss (bilateral in many case), interstitial, arthritis, keratitis, rash	High dose steroid
Perilymph fistula	"Popping" sound, hearing loss, or tinnitus after head trauma, barotrauma, cough, sneeze, straining	Possible positive fistula sign (nystagmus induced by pressure change in external ear canal)	Bed rest, avoidance of straining explore ear if symptoms persist
Migrain	Headache, visual aura, unilateral numbness, motion sensitivity dysphagia, lateropulsion	Normal in most cases	Beta blocker, Calcium-channel blocker, tricyclic amines
Vertebrobasilar Insufficiency	Visual loss, diplopia, ataxia, dysarthria, numbness, weakness	Normal in most cases	Antiplatelet drug (Aspirin 75-330 mg daily, ticlopidine 500 mg daily); anticoagulant for severe progressive symptoms

CONCLUSION

Audiovestibular symptoms can be found in various autoimmune diseases. Patients with a diagnosis of SLE can find comorbid peripheral vestibular disorders such as vertigo where there is an antibody mechanism that can damage the inner ear. Treatment of audiovestibular symptoms is usually strongly associated with systemic conditions and in patients with vertigo betahistine may be given

Acknowledgement: None

Conflict of Interest: None

Source of Funding: None

REFERENCES

1. Gazquez I, Soto-varela A, Aran I, Santos S, Batuecas A, Trinidad G, et al. High Prevalence of Systemic Autoimmune Diseases in `re's Disease Patients with Menie. 2011;6(10).
2. Karatas E, Onat AM, Durucu C. Audiovestibular disturbance in patients with systemic lupus erythematosus. 2007;82-6.

3. Manson JJ, Rahman A. Systemic lupus erythematosus. 2006;6:1–6.
 4. Stadio A Di, Ralli M. Systemic Lupus Erythematosus and hearing disorders : Literature review and meta-analysis of clinical and temporal bone findings Clinical findings. 2017;
 5. Maciaszczyk K, Pajor A, Erkiert-polgaj A, Durko T. Stan narządu przedsionkowego u pacjentów z układowym toczniem rumieniowatym Vestibular organ in patients with systemic lupus erythematosus. 2010; (1):257–63.
 6. Mokbel AN, Hassan SZ, Zohdi MI, Elshennawy AM. Egyptian Society for Joint Diseases and Arthritis Auditory disorders in patients with systemic lupus erythematosus : Relation to clinical parameters. Egypt Rheumatol [Internet]. 2014;1–8. Available from: <http://dx.doi.org/10.1016/j.ejr.2014.01.007>
 7. Bisdorff A, Von Brevern M, Lempert T, Newman-Toker DE. Classification of vestibular symptoms: Towards an international classification of vestibular disorders. J Vestib Res Equilib Orientat. 2009;19(1–2):1–13.
 8. Hain TC, Uddin M. Pharmacological Treatment of Vertigo. 2003;17(2):85–100.
 9. Girasoli L, Cazzador D, Padoan R, Nardello E, Felicetti M, Zanoletti E, et al. Review Article Update on Vertigo in Autoimmune Disorders , from Diagnosis to Treatment. 2018;2018.
 10. Gad GI, Abdelateef H. Function of the Audiovestibular System in Children with Systemic Lupus Erythematosus. 2014;4–9.
 11. Ralli M, D'Aguzzo V, Di Stadio A, De Virgilio A, Croce A, Longo L, et al. Audiovestibular symptoms in systemic autoimmune diseases. J Immunol Res. 2018;2018.
 12. Baloh. 1998. Vertigo. THE LANCET • Vol 352 • December 5
- How to cite this article: Putri AF, Hidayati HB. Vertigo in systemic lupus erythematosus: a case report. *International Journal of Research and Review*. 2021; 8(9): 327-330. DOI: <https://doi.org/10.52403/ijrr.20210943>
