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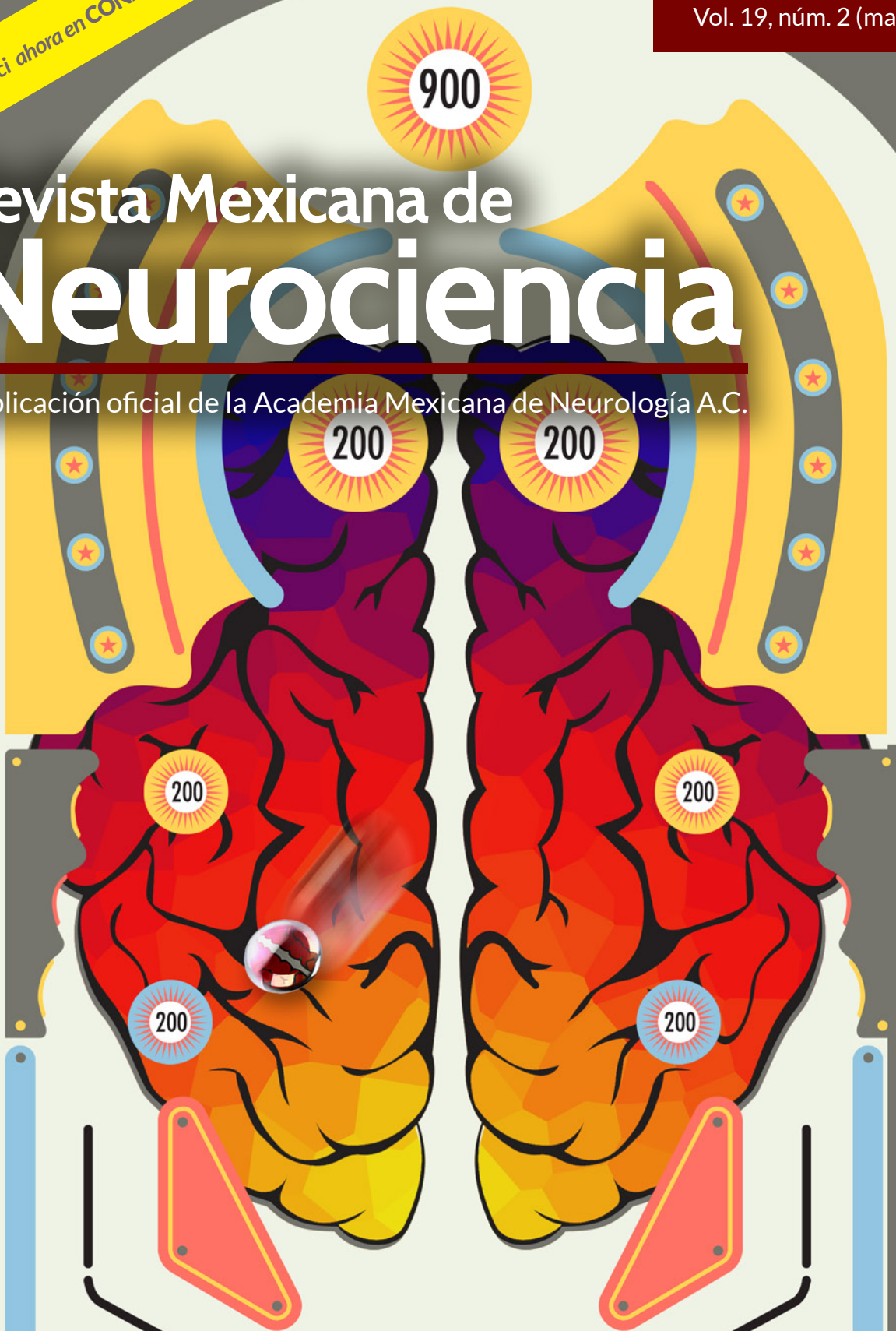

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Case report

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Susac's Syndrome (retinocochleocerebral vasculopathy): a case report.

Síndrome de Susac (vasculopatía retinococleocerebral): reporte de un caso

Abstract

Introduction: Susac's Syndrome (SS) is a rare disease first described in 1979 characterized by the clinical triad of encephalopathy, neurosensory auditory loss, and partial or complete occlusion of the retinal artery. Described as an inflammatory disease, presumably an autoimmune disease, against vascular endothelium that causes occlusion of the small vessels. The diagnosis is supported by brain MRI, retinal fluorography, and audiometry. It's a subdiagnosed syndrome with numerous differential diagnostics. The prevalence is unknown, until now only 300 cases have been registered worldwide. Young women are the most affected.

Case presentation: 34-year-old woman, no history of chronic-degenerative diseases, catholic, housekeeper, doesn't keep pets or other animals, no surgical history, no allergies, no use of tobacco, alcohol, or illicit drugs, no recent travels. Medical history: begins 6 months ago with vertigo, emesis of undigested food in multiple occasions, holocranial cephalalgia. After 2 months, presents sudden auditory loss, right ear tinnitus, somnolence, disorientation, difficulty articulating words, lower limbs weakness, and difficulty walking. PE: BP 100/60mmHg, HR 78', T 36.5°C, RR 15'; normocephalic, inexpressive face, skin and mucous membranes well hydrated and without pallor, no infiltration to subcutaneous cellular tissue, neck without jugular venous distention; at pulmonary level with vesicular murmur, no rales or wheezing, no pathological sounds; cardiac sounds with adequate tone and volume, no murmurs; abdomen soft, depressible, non painful, without signs of peritoneal irritation. At neurological level: awake, capable of fixating attention but for short periods of time, monotonous speech, comprehends simple commands but doesn't obeys them, uncooperative. Cranial nerves: I not assessable, II visual acuity not assessable, visual field campimetry indifferent, III IV and VI central primary gaze, isochoric pupils, normal photopupillary and consensual reflexes, rest of cranial nerves without alteration; strength 4/5 in upper limbs and 3/5 in lower limbs, normal sensory; cerebellum and gait not assessables; atavistic reflexes absent; no abnormal movements; meningeal signs absent. Fundoscopic exam is normal. CBC: WBC 6.7

Neut 5 Hb 13.1 Plat 264 Gluc 106 Urea 41 Cr 0.9 Na 136 K 4.1 Cl 101 BUN 20; CSF normal, CSF culture negative, CSF cytology normal; LFT with TB 0.9 CB 0.6 UB 0.3 ALT 25 AST 16. Cerebral MRI: periventricular white matter lesions, which are hyperintense in T2, with multiple small lesions in the central portion of the corpus callosum. Audiometry: right asymmetry in phonemic discrimination. Fluorescein angiography: hyperfluorescence of peripheral retinal arteries. Vestibular tests: no spontaneous nistagmus, right canalicular hypoexcitability of 26%, study compatible with vestibular dysfunction at brain stem level and right intracanalicular paresis. Medical treatment was indicated with human immunoglobulin for 5 days, with improvement of symptoms, mental functions, and strength, remaining only with right hypoacusis. Control MRI with evidence of improvement with decrease of the hyperintense lesions, remaining only the lesions at the corpus callosum. Patient is discharged with ambulatory treatment.

Differential diagnosis: Multiple Sclerosis, Optic Neuritis, Encephalitis, among others must be ruled out.

Conclusion: SS is an infrequent entity, characterized by cerebral, retinal, and auditory affection with multiple differentials, which make its diagnosis a medical challenge.

Keywords

Immunotherapy, retinocochleocerebral vasculopathy, CNS dysfunction, retinal artery occlusions.

Resumen

El síndrome de Susac (SS) es una entidad poco frecuente descrita inicialmente en 1979 constituida por la triada clínica de encefalopatía, pérdida auditiva neurosensorial y oclusión arterial retinal. Es un fenómeno inflamatorio presumiblemente autoinmune contra los endotelios vasculares que ocasiona oclusión de pequeños vasos. El diagnóstico clínico es apoyado por RM cerebral, retinofluorografia y audiometría. El SS es subdiagnosticado con numerosos diagnósticos diferenciales. La prevalencia del SS es desconocida, hasta la fechase han registrado aprox 300 casos a nivel mundial. Las mujeres jóvenes son las más afectadas.

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Presentacion del caso: Presentamos a una femenina de 34años de edad, sin cronicodegenerativos, ocupación hogar, zoonosis negado, quirúrgicos negados, alergias negados, toxicomanías negadas.Inicia su padecimiento actual6meses previas a su ingreso caracterizado por vértigo, emesisde contenido alimentario en múltiples ocasiones, cefalea. Dos meses posteriores presenta disminución súbita de la audición, tinnitus del oído derecho, así como somnolencia, desorientación, disartria, debilidad en extremidades inferiores e imposibilidad para la deambulación. Al examen físico TA 100/60 mmHg, FC 78, Temp 36.5 FR 15, normocéfalo, mucosas rosadas y húmedas, no edema, cuello normo configurado no IY, cardiopulmonar murmullo vesicular conservado no estertores, ruidos cardiacos rítmicos no soplos. Abdomen blando depresible no doloroso a la palpación, neurológico: despierta, no mantiene atención, habla monótona, no nomina. Nervios del cráneo I: No valorable, II: AV no valorable campimetría por amenaza indiferente, VIII: hipoacusia derecha resto de pares craneales sin alteraciones. Sensibilidad sin alteraciones, marcha no valorable, atávicos ausentes, sin movimientos anormales. Signos meníngeos ausentes. Fuerza muscular miembros superiores 4/5 y miembros inferiores 3/5. Fondo de ojo normal. Se realizan exámenes complementarios: BH leu 6.7 neu 5 Hb 13.1 plaq 264, Gl 106 urea 41 cr 0.9 Na 136 K 4.1 cl 101 bun 20 cultivo, cito químico y citológico de LCR normal, RMN Cerebral: Lesiones en sustancia blanca a nivel peri ventricular hiperintensas en T2 con múltiples lesiones pequeñas en la porción central del cuerpo calloso. Audiometría: Asimetría derecha en discriminación fonemica. Fluorangiografia: hiperfluorescencia de arteriolas retinianas periféricas. Pruebas vestibulares: hipoexcitabilidad canalicular derecha del 26%, estudio compatible con disfunción de vías vestibulares a nivel de tallo cerebral y paresia canalicular derecha. Se indicó tratamiento médico con Inmunoglobulina 5 dosis, presenta mejoría de los síntomas de sus funciones mentales superiores y fuerza muscular sin embargo persiste con hipoacusia de predominio derecho. RMN control con disminución lesiones. Se decide su alta y tto ambulatorio.

Diagnosticos diferenciales: Es imprescindible descartar Esclerosis Múltiple, Neuritis Óptica, Encefalitis entre otras.

Conclusión: El SS es una entidad rara, se caracteriza por la triada afección cerebral, auditiva y retiniana. Es un reto diagnóstico.

Palabras clave

Encefalopatía, pérdida auditiva neurosensorial, oclusión arterial retinal, inmunoglobulina.

Introduction

Susacsyndromeisararediseasethatischaracterized by the clinical triad of encephalopathy, branch retinal artery occlusion, and sensorineural hearing loss. It may affect men and women between 7 and 72 years, but most of the patients are between 20 and 40 years old. Women are more often affected than men, the relation is 3 women to 1 man. Susac syndrome is an orphan disease that needs to be considered in the differential diagnosis of a broad variety of disorders. In Susac syndrome, autoimmune processes leading to damage and inflammation-related occlusion of the icrovessels in brain, retina, and inner ear are thought to play a causal role.[1]

Typical findings in patients with Susac syndrome include demonstration of branch retinal artery occlusions (BRAO) on retinal fluorescein angiography. Given the lack of systematic data on Susac syndrome, our current knowledge on the epidemiology, clinical presentation spectrum, disease course, paraclinical findings, and prognosis and treatment options for this disorder largely rests upon nonsystematic and anecdotal data.[2] The lesions detectable by conventional MRI do not, however, explain the type and severity of the neuropsychological deficits.[1] The syndrome should be differentiated from a number of other diseases, including multiple sclerosis (MS), acute disseminated encephalomyelitis (ADEM), or systemic vasculitis.[3] At the ocular level, the characteristic finding in patients with Susac syndrome is the branch retinal artery occlusion that may be accompanied or preceded by the areas of arterial wall hyperfluorescence on fluorescein angiography.[4]

According to Dorr *et al*., there were 304 cases reported by 2013.[5] Presentation with the full clinical triad of symptoms (CNS, eye and ear symptoms) at disease onset is rare and, therefore, diagnosis should not rely solely on presence of the triad.[2] The diagnosis is based primarily on the clinical presentation, the documentation of BRAO, the presence of typical features on fluorescein angiography (FA), and the characteristic findings on cerebral MRI that help distinguish SS from other inflammatory entities. The characteristic MRI findings include central corpus callosum involvement and brain infarctions.

T2-weighted images typically show multifocal small hyperintense foci that involve mainly the central part of the corpus callosum but spare the periphery. Fluid-attenuated inversion recovery (FLAIR) may show lesions in the corpus callosum centrally located in the periventricular whitematter and subcortical white matter. Cerebrospinal fluid examination shows lymphocytic pleocytosis and elevated protein levels, usually during the encephalopathic phase and, occasionally, elevatedmyelin basic protein.[6]

Magnetic Resonance Imaging (MRI) features of Susac's syndrome may include leptomeningeal enhancement in approximately 20% to 33% of cases.[7] Relevant titers of antiendothelial cell antibodies have been observed in up to 25% of patients with SuS, but their significance remains to be clarified.[8] Although spontaneous recovery and long-term remission have been described, many patients respond to immunosuppressive agents, suggesting a possible autoinmune pathogenesis.[9] The lack of randomized controlled therapeutic trials means that it is not possible to recommend standardized guidelines. Possible treatments are based on the results of clinical experience supported by individual reports and case series.[6]

Susac's syndrome can be a disabling disease. Early immuno- suppression can impact on axonal integrity and thus, on patient's prognosis and outcome. However, despite aggressive treatment, the immunological response can be different in each patient, and sometimes multiple regimens are needed.[10] A key message for the clinician should be to perform brain MRI, audiogram and retinal angiography whatever the mode of entry, in order not to miss one (or two) features of this syndrome triad.[11]

Case report

We present the case of a 34-year-old woman, no history of chronic-degenerative diseases, catholic, housekeeper, doesn't keep pets or other animals, no surgical history, no allergies, no use of tobacco, alcohol, or illicit drugs, no recent travels. Medical history: begins 6 months ago with vertigo, emesis of undigested food in multiple occasions, holocranial cephalalgia with and intensity of 5/10 VAS; reasons why she seeks medical attention and it's given non specified treatment with partial improvement of the symptoms. 2 months after the beginning of symptoms, the patient presents sudden auditory loss, right ear tinnitus, somnolence, disorientation, difficulty articulating words, lower limbs weakness, and difficulty walking. Once again seeks medical attention and it's given dexamethasone, amitriptyline, and diazepam, without improvement of the symptomatology. Physical examination: BP 100/60mmHg, HR 78', T 36.5°C, RR 15'; normocephalic, inexpressive face, skin and mucous membranes well hydrated and without pallor, no infiltration to subcutaneous cellular tissue, neck without jugular venous distention; at pulmonary level with vesicular murmur, no rales or wheezing, no pathological sounds; cardiac sounds with adequate tone and volume, no murmurs; abdomen soft, depressible, non-painful, without signs of peritoneal irritation. At neurological level: awake, capable of fixating attention but for short periods of time, monotonous speech, comprehends simple commands but doesn't obeys them, uncooperative. Cranial nerves: I not assessable, II visual acuity not assessable, visual field campimetry indifferent, III IV and VI central primary gaze, isochoric pupils, normal photopupillary and consensual reflexes, rest of cranial nerves without alteration; strength 4/5 in upper limbs and 3/5 in lower limbs, normal sensory; cerebellum and gait not assessables; atavistic reflexes absent; no abnormal movements; meningeal signs absent. Fundoscopic exam is normal. CBC: WBC 6.7 Neut 5 Hb 13.1 Plat 264 Gluc 106 Urea 41 Cr 0.9 Na 136 K 4.1 Cl 101 BUN 20; CSF normal, CSF culture negative, CSF cytology normal; LFT with TB 0.9 CB 0.6 UB 0.3 ALT 25 AST 16. Cerebral MRI (Figures 1, 2, and 3): periventricular white matter lesions, which are hyperintense in T2, with multiple small lesions in the central portion of the corpus callosum. Audiometry (Figure 5): right asymmetry in phonemic discrimination. Fluorescein angiography (Figure 4): hyperfluorescence of peripheral retinal arteries. Vestibular tests: no spontaneous nistagmus, right canalicular hypoexcitability of 26%, study compatible with vestibular dysfunction at brain stem level and right intracanalicular paresis. Medical treatment was indicated with human immunoglobulin for 5 days, with gradual improvement of symptoms, mental functions, and strength, but still with right hypoacusis. A control MRI is taken with evidence of significant improvement with decrease of the hyperintense lesions, remaining only the lesions at the corpus callosum. The patient is discharged and followed ambulatory with a scheme of cyclophosphamide, currently in its first scheme of treatment.

Figure 1. Patient's MRI (sagittal plane) during FLAIR sequence showing bright abnormalities along the corpus callosum before starting treatment with human immunoglobulin. The bright abnormalities are consistent with demyelinating lesions.

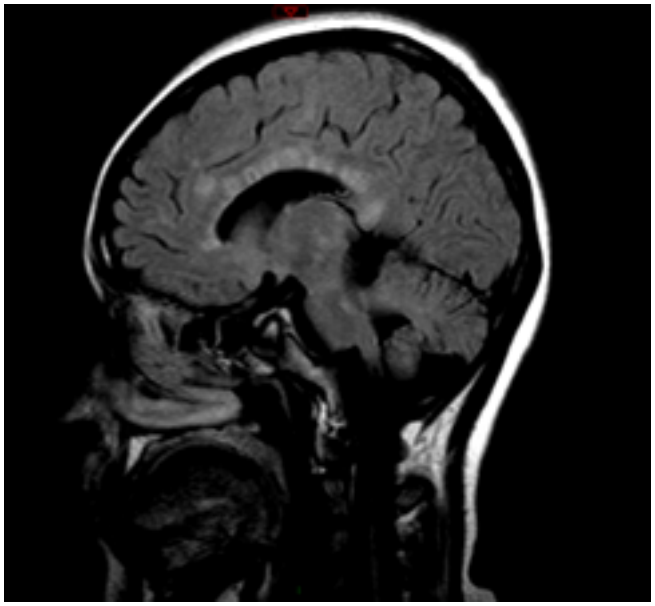


Figure 2. Patient's MRI (axial plane) during FLAIR sequence showing periventricular demyelinating lesions before treatment with human immunoglobulin (left), and after receiving 5 days of human immunoglobulin showing the disappearance of the periventricular demyelinating lesions (right).

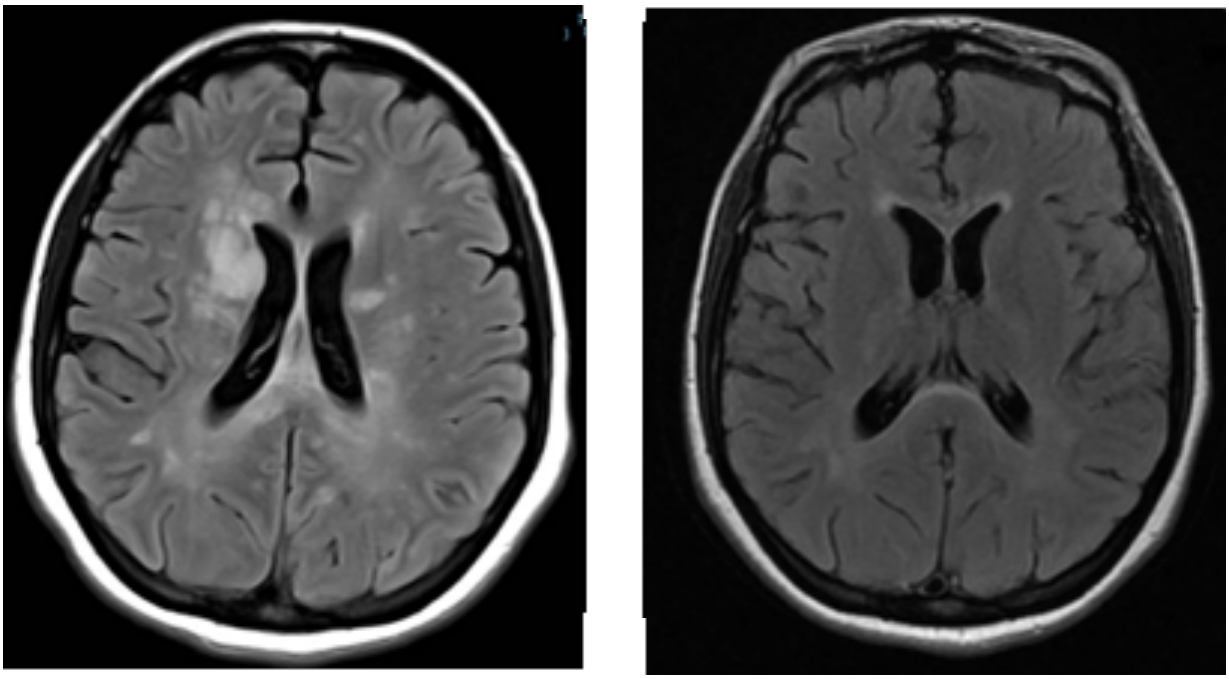


Figure 3. Patient's MRI (axial plane at basal ganglia) during FLAIR sequence showing bright abnormalities consistent with demyelinating lesions before treatment (left), and after 5 days of treatment with human immunoglobulin showing the disappearance of those demyelinating lesions (right).

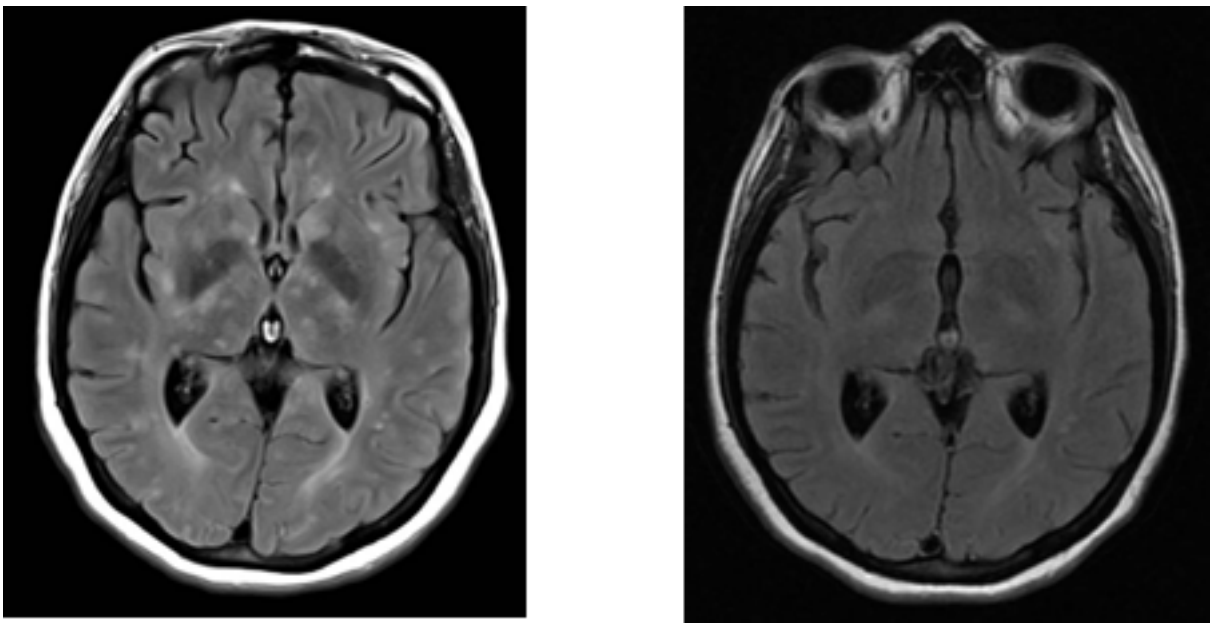


Figure 4. Patient's fundus photography (larger image) showing no suggestive lesion at first glance. Patient's fluorescent angiography during mid phase or recirculation phase (upper image) showing roughly equal brightness between arteries and veins; patient's fluorescent angiography during late phase (lower image) showing hyperfluorescence from peripheral retinal arterioles suggesting leakage and possible damage to retina vascular endothelium.

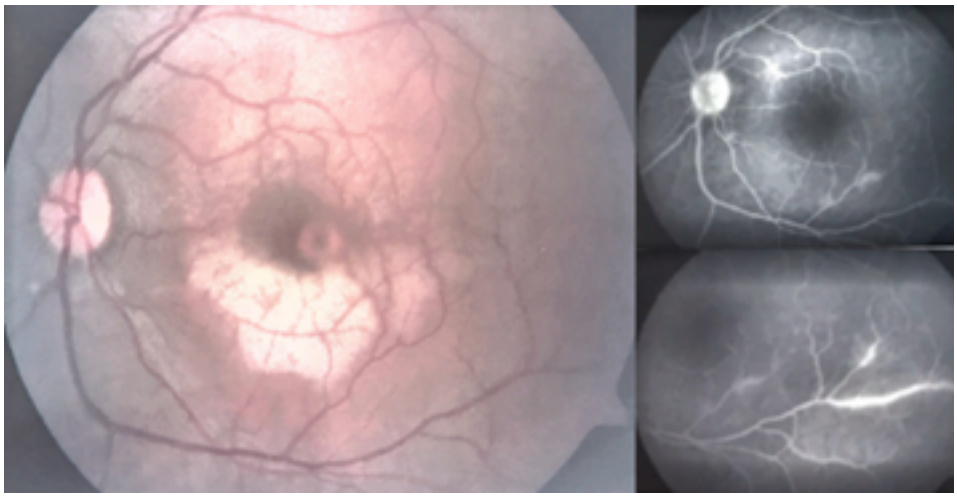
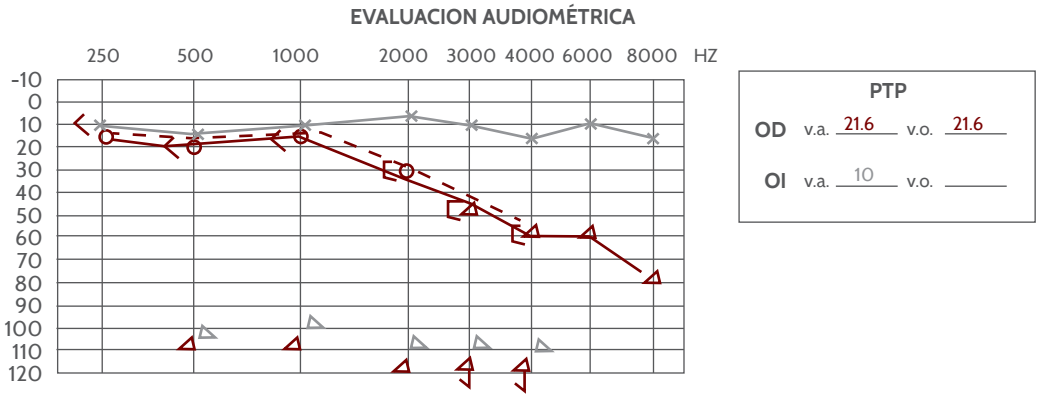


Figure 5. Patient's audiometry showing left ear (blue line) and right ear (red line) response. We can see mild to moderate sensorineural hearing loss in the mid and high frequency ranges of the right ear, giving the patient asymmetry in phonemic discrimination.



Discussion

Susac syndrome an autoimmune processes leading to damage and inflammation-related occlusion of the icrovessels in brain, retina, and inner ear are thought to play a causal role.[1] Typical findings in patients with Susac syndrome include demonstration of branch retinal artery occlusions (BRAO) on retinal fluorescein angiography. Given the lack of systematic data on Susac syndrome, our current knowledge on the epidemiology, clinical presentation spectrum, disease course, paraclinical findings, and prognosis and treatment options for this disorder largely rests upon nonsystematic and anecdotal data.[2] The syndrome should be differentiated from a number of other diseases, including multiple sclerosis (MS), acute disseminated encephalomyelitis (ADEM), or systemic vasculitis.[3]

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Conclusiones

Susac syndrome is a rare entity that is difficult to diagnose but doctors need to know how to make a diagnosis as soon as possible, taking into account the spectacular response to medical treatment and avoiding neurological sequelae. It is an entity in which have to participate several specialties for a correct diagnosis.

Conflict of interest

No conflict of interest was declared by the authors.

Founding

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