Diffuse Systemic Sclerosis Presenting as Meniere’s Disease-Like Symptoms as Part of Autoimmune Inner Ear Disease

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Ear involvement has been described in systemic sclerosis (SSc), where hearing loss and vestibulopathy coexist with other disease manifestations [1,2]. We present an unusual case of SSc where Meniere’s disease as part of autoimmune inner ear disease (AIED) was the first presentation of diffuse SSc. The literature regarding audiovestibular involvement in SSc is reviewed.

PATIENT DESCRIPTION

A 44 year old previously healthy woman presented after 2 months of recurrent vertigo, nausea and vomiting, in addition to intermittent right ear tinnitus and fullness. Physical examination was positive for first-degree left beating spontaneous nystagmus. Otoneurological laboratory evaluation indicated right ear mixed sensorineural and conductive hearing loss and right peripheral vestibulopathy involving both the semicircular canals and otolithic organs. A diagnosis of definite Meniere’s disease was reached. Treatment with a low salt diet, acetazolamide 250 mg once a day and betahistine 16 mg three times/day was recommended. The vertigo attacks resolved. Follow-up audiometry showed progressive bilateral mixed hearing loss. Serological evaluation revealed solely antinuclear antibodies. A diagnosis of AIED was reached. Prednisone 1 mg/kg and aspirin 100 mg/day resulted in fair improvement. Methotrexate 20 mg/week was added.

Three years after her initial presentation, while on a regimen of 20 mg/week methotrexate and 5 mg/day prednisone, the patient developed Raynaud’s phenomenon, accelerated skin fibrosis with progressive sclerodactyly, arthritis and dyspepsia. Scl-70 antibodies became apparent on the immunological evaluation. The diagnosis of diffuse SSc was reached. Gradually other disease manifestations appeared, including severe skeletal and cardiac blunt myopathy, lung fibrosis, esophageal dysmotility, “watermelon” stomach and paralytic ileus. Sequential treatment with high dose steroids, cyclophosphamide, mycophenolate mofetil, IV immunoglobulins and bosentan all failed to attenuate the progressive diffuse SSc. Five years after her presentation the patient died of a fatal arrhythmia.

COMMENT

The prevalence of bilateral sensorineural hearing loss (SNHL) among SSc patients ranges from 20% to 69%, while a conductive component contributes to the hearing loss in 3–11% of them [1,2]. Dizziness and vertigo have been reported in 21–75% of patients [2], with a specific diagnosis of benign paroxysmal positional vertigo (BPPV) in 17% [3]. Hearing loss and vestibular derangement have been mostly reported in patients with an established diagnosis of SSc and not as the presenting symptom of the disease [4]. In addition to the present case, to the best of our knowledge there is only one other description of AIED as the initial symptom of SSc. In that case of limited SSc, bilateral sudden sensorineural hearing loss preceded the appearance of scleroderma skin changes by several months [4].

Another unique feature of our patient was her initial Meniere’s disease-like symptoms. Meniere’s disease-like symptoms have not been previously described in SSc although they have been reported in other rheumatic diseases. The severity of hearing impairment in SSc patients is highly variable, ranging from asymptomatic high frequency loss not affecting speech reception and discrimination to a flat audiogram with profound hearing loss [2].

Most previous publications [2] did not find a significant correlation between hearing loss and age, duration, type and severity of SSc systemic manifestations of the disease, presence of autoantibodies and drug therapy. A single cohort study reported a significant correlation between the presence of pulmonary hypertension digital ulcers and abnormal audiometric tests in a limited number of SSc patients [1]. In another study that included diffuse SSc patients, older age correlated significantly with the SNHL severity [2].
Although cochlear, middle ear and vestibular end-organ involvement has been suggested as the common etiology for hearing loss, dizziness and vertigo, other factors have also been described in SSc patients, such as auditory neuropathy, cranial nerve VIII involvement and central vestibular abnormalities.

It has been suggested that the reported impairment of multiple vestibular end-organs points to peripheral vestibulopathy of ischemic origin or an intralabyrinthine autoimmune process [1,3]. As in other manifestations of SSc, immunosuppressive therapy is effective in AIED when the disease phase consists mainly of inflammatory processes in contrast to the fibrotic and ischemic phases, which are generally irreversible.

The first line of treatment of AIED is high dose corticosteroids. Case reports have been published on the positive response to azathioprine, mycophenolate mofetil, cyclophosphamide, plasmapharesis and intratympanic infliximab. A randomized study found that methotrexate was no more effective than a placebo. Clinical trials with etanercept have yielded mixed results [5].

In conclusion, AIED might be a rare presenting symptom of SSc. Ear involvement is variable and initially can imitate known otoneurological entities including Meniere's disease. Thus, a high index of suspicion is recommended, including awareness of systemic autoimmune disease manifestations and immunological studies.

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References

Ocular involvement in monogenic autoinflammatory diseases

Monogenic autoinflammatory disorders (AIDs) are an expanding group of diseases of the innate immune system characterized by unprovoked attacks of systemic inflammation, which typically present in the absence of autoantibodies and autoreactive T cells. The family of monogenic AIDs includes periodic fever syndromes, pyogenic and granulomatous disorders, all characterized by recurrent fever attacks with localized inflammation involving various districts, such as skin, serosal membranes, joints, gastrointestinal tube, central nervous system and eye. Their heterogeneous clinical spectrum is caused by mutations in genes involved in the regulation of inflammatory and apoptotic signals, mostly components of the inflamasome, cytokine receptors, or receptor antagonists, and culminating with the aberrant release of pro-inflammatory cytokines such as interleukin-1beta (IL-1β) and tumor necrosis factor-alpha (TNFα). Bascherini et al. summarize the most relevant monogenic AIDs affecting the eye. They reviewed all the medical literature regarding the protean ocular involvement in AIDs, mainly considering granulomatous disorders, familial Mediterranean fever (FMF), TNF receptor-associated periodic syndrome (TRAPS), mevalonate kinase deficiency (MKD) and cryopyrin-associated periodic fever syndromes (CAPS). The review underlines how eye involvement may be relevant and represent, if untreated, a serious condition with long-term complications and risk of potential blindness, particularly in Blau and CINCA syndrome. They suggest managing ocular disease with topical application and/or systemic administration of corticosteroids, including the use of immunosuppressive drugs in the case of disease reactivations or other complications. In refractory cases, although more data from observational and experimental studies are needed, biologic agents inhibiting IL-1 or TNFα appear to be a new and potent tool in the management of eye involvement in AIDs patients.

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““When words become unclear, I shall focus with photographs. When images become inadequate, I shall be content with silence””

Ansel Adams (1902-1984), American photographer and environmentalist

“The world breaks everyone, and afterward, some are strong at the broken places”

Ernest Hemingway (1899-1961), American author and journalist, whose works are considered classics of American literature. He won the Nobel Prize in Literature in 1954. His wartime experiences formed the basis for his novel A Farewell to Arms; other famous works include For Whom the Bell Tolls and The Old Man and the Sea.