

1 **Hearing Loss in Takayasu's Arteritis: A Role for Hyperbaric Oxygen Therapy?**

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3 Dear Editor,

4 There is growing interest in the scientific community for associated symptoms in Takayasu's
5 arteritis (TA), an autoimmune condition that mainly affects medium and large arteries ^[1]. Hearing
6 loss (HL) is a rare complication of TA that is often overlooked, with severe consequences on
7 quality of life. It mainly presents as Sudden Sensorineural Hearing Loss (SSHL) and responds to
8 corticosteroid therapy ^[2]. In the authors' opinion, reasons of misdiagnosis of HL in TA are the lack
9 of information on this rare association and that TA is known to involve large caliber arteries,
10 instead of small vessels typical of the inner ear.

11 The etiology of hearing loss in TA is still unknown ^[3]; it has been hypothesized that it could
12 follow the elevation of serum immune complexes that deposit in the inner ear or reversible
13 hypercoagulability in response to the arterial disease. Noel reported occlusion of small retinal
14 vessels as a rare and severe microcirculatory complication in TA ^[4]; common immunopathology
15 mechanisms with hearing loss could be hypothesized.

16 Available options presented in the literature for HL in TA include steroids as first-line
17 therapy ^[2]; however, steroid therapy may not be sufficient to restore hearing, and its interruption has
18 been reported to exacerbate HL ^[5]. Hyperbaric Oxygen Therapy (HBOT), commonly used as a
19 supplementary treatment for SSHL, has never been reported for the treatment of HL in TA patients.

20 We have recently used HBOT in a 36-years old woman affected by TA who experienced
21 two episodes of SSHL in different ears within a 11-month period ^[6]. The patient was unresponsive
22 to high-dose intramuscular steroid therapy (betamethasone 8mg/day for 10 days) in the first
23 episode. Two days after the second HL episode, occurred 11 months after the first, we accompanied
24 corticosteroid therapy with 16 sessions of HBOT (1/day, 6 days/week) with significant
25 improvements in both ears, including the one that had shown to be unresponsive to steroid therapy.

26 This unexpected clinical finding could support the involvement of inner ear microcirculation in HL
27 presenting in TA patients.

28 Although this is a single-case finding and HBOT has been administered in association to
29 steroid therapy, the significant recovery of HL in both sides following HBOT may be worth sharing
30 with the scientific community. In conclusion, it is recommended to raise awareness among
31 professionals involved with TA on considering HL as a possible complication that should be treated
32 with corticosteroid therapy and, with further evidence, HBOT.

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34 **Informed consent:** Written informed consent was obtained from the individual included in the
35 study.

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38 **References**

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