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RESEARCH ARTICLE

A case of reversible sensorineural hearing loss associated with chronic use of Lithium.

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Abstract

Despite the fact that lithium is the commonly used mood stabilizer, clinicians dependably need to stay vigilant regarding its side effect profile. Hearing loss with lithium is unusual, and is reported solely in animal study. Here we are describing a case of sensorineural hearing loss induced by lithium.

INTRODUCTION

Lithium is one of the most widely used and studied medication for treating bipolar disorder. Lithium helps reduce the severity and frequency of mania. It may also help relieve or prevent bipolar depression. Side effect profile of lithium is mainly tremor, polyuria, polydipsia, hypothyroidism, vomiting, diarrhea, muscle weakness etc. (Goldberg, 2014). Lithium induced hearing loss is a very unusual side effect of lithium. Horner et al., (1997) demonstrated a case of lithium induced reversible hearing loss in guinea pig. It was seen that after getting chronic lithium treatment, the guinea pig developed low frequency hearing loss and in the longer term, loss of sensitivity is observed across the whole audiogram. Plenge and Moller, (2008) reported a case of lithium toxicity associated with tinnitus, vertigo and hearing loss following an episode of vasodilatory shock. Human study related to hearing loss with lithium in therapeutic dose range is not reported yet.

However various literatures have reported hearing impairment in patients of hypothyroidism (Schroeder and Kristen, 2005; Orlander, 2014). Here we have keyed out a case of lithium induced hearing loss, which is not linked to hypothyroidism.

Case summary:

A 48 years old female presented to our outpatient facility of psychiatry with a history of numerous manic episodes in the past four years. She could recall four episodes of depressive episode previously**.** Past medical history did not uncover any abnormality. A diagnosis of bipolar affective disorder (BPAD), currently in remission was attained.

The treatment records of the past few years revealed that four years back, she was started on tablet lithium carbonate at a dose of 900 mg/day as a mood stabilizer. There was history of receiving tablet Risperidone during her acute

stage; merely it was tapered off within three months. In the later part she was maintaining well with lithium 1200 mg/day.

But during this Out Patient Department (OPD) visit, she revealed difficulty in hearing. On further enquiry she stated that she was having trouble in hearing for last 3 years. Hearing loss was of bilateral type. Initially there was difficulty in following conversation that was in low tone sound. She consulted an ENT specialist for that 3 years back for it but didn't follow up as there was not much of dysfunction. Later, as she had difficulty while talking in mobile phone and following the conversation in TV for which she consulted an ENT specialist again 2 months back. . On physical examination and clinical testing, she was having a positive Rinne test, Weber test- central, Absolute bone conduction test- reduced on the both sides, when compared to the examiner Pure tone audiometry testing (PTA) revealed 50 dB hearing loss in the range of 4000 – 8000 HZ. Considering all this, she was diagnosed to be case of sensory-neural hearing loss (SNHL), documents of which were shown by the patient. She was referred by the ENT specialist for review of her psychiatric treatment on the background of her hearing problem to our OPD.

On reviewing the treatment records of the past few years it was revealed that she had been on and off lithium following which there was relapse but again when lithium was started she was doing well with it. At the time of presentation to our OPD she was taking Lithium 1200 mg/day. Possibility of hearing loss associated with use of lithium was thought as the patient was taking this medication for a long time. With respect to the potential linkage between lithium induced hypothyroidism and poor hearing, thyroid profile and serum lithium level was done and found to be in the normal range. Possibilities of other etiological factors like viral infection like Rubella, Mumps, malaria, history of receiving drugs like Streptomycin, Tobramycin, Chloroquine etc. were ruled out by thorough history taking. While looking at the whole scenario, intake of lithium was found to be associated with her hearing problem. Later on Lithium was stopped and Oxcarbazepine 150 mg/day was started and increased up to 900 mg/day. Oxcarbazepine was preferred because some study reports have demonstrated hearing problem in patients receiving commonly used mood stabilizers like valproate and carbamazepine as well. On subsequent follow up, she was maintaining well and her hearing loss was improving.

Discussion:

Although many drugs have been found to cause sensorineural hearing loss, only a couple of psychotropic is reported to cause this adverse effect. Other commonly used mood stabilizers like sodium valproate and carbamazepine has been accounted for to cause hearing loss in various previous studies (Armon et al., 1990; Japaridze et al., 1993). SNHL is not common with lithium. Plenge et al. (2008) reported a case of vasodilatory shock with hearing impairment in a case of lithium carbonate toxicity due to self poisoning. Repeated hemodialysis was performed in their patient to treat the vasodilatory shock and consequently the patient was recovered from the hearing impairment (Plenge and Moller, 2008). An animal study by Horner et al. (1997) has reported reversible SNHL in the guinea-pig receiving Lithium. Our study is the first study to report SNHL due to lithium in human in its therapeutic dose range. In our case, with proper ENT consultation, we have ruled out the common etiological factors for SNHL. So we have attributed Lithium as the cause of hearing loss. The likelihood of chance association of SNHL with Lithium seems, by all accounts, to be high as the Naranjo Adverse Drug Reaction probability scale is 8 (Naranjo et al., 1981). Lithium induced inhibition of phosphoinositol cascade within the inner ear may be regarded as a contributory mechanism of hearing loss here as reported by Horner et al., (1997) and Plenge and Moller, (2008)

As mentioned there are only animal studies that have reported hearing loss associated with use of lithium and no human case studies had been found in literature. So an eye of caution needed to be kept in patients who are taking lithium for a long time or those who already have hearing problems prior to starting lithium. A well designed case controlled study will be most helpful to explore the level of significance of association between lithium and hearing loss.

References

1. Armon, C., Brown, E., Carwile, S., Miller, P. and Shin, C. (1990): Sensorineural hearing loss: A reversible effect of valproic acid. Neurology., 40: 1896-1898.
2. Goldberg, J. (2014). Lithium for Bipolar Disorder. [ONLINE] Available at: http://www.webmd.com/bipolar-disorder /bipolar -disorder-lithium?page=2. [Last Accessed 23 January 2015].
3. Horner, K.C., Huang, Z.W., Higuerie, D. and Cazals Y, (1997): Reversible hearing impairment induced by lithium in the guinea pig. Neuroreport., 8 (6): 1341-1345.

4. Japaridze, G., Kvernadze, D., Geladze, T. and Kevanishvili, Z. (1993): Effects of carbamazepine on auditory brainstem response, middle-latency response, and slow cortical potential in epileptic patients. Epilepsia., 34: 1105-1109.
5. Naranjo, C.A., Busto, U., Sellers, E.M., Sandor. P., Ruiz, I. and Roberts, E.A., et al., (1981): A method for estimating the probability of adverse drug reactions. Clin Pharmacol Ther., 30: 239-245.
6. Orlander, P.R. (2014). Hypothyroidism. [ONLINE] Available at: http://emedicine.medscape.com/article/122393-overview. [Last Accessed 23 January 2015].
7. Plenge, U. and Moller, A.M. (2008): Development of sustained vasodilatory shock and permanent loss of hearing after severe lithium carbonate poisoning. Ugeskr Laeger., 170 (5): 354.
8. Schroeder and Kristen. (2005): The effect of hypothyroidism on hearing loss susceptibility. Hearing., 58 (9): 10-12