

Lithium induced sensori-neural hearing loss : a case report

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ABSTRACT

Lithium has been widely used in the management of various psychiatric disorders. There are many known side effects of lithium and there therapeutic drug monitoring of lithium is advised. The following case reports describe sensorineural hearing loss after starting lithium carbonate which was reversed on stoppage of the drug.

Key words – *Lithium, sensorineural hearing loss.*

INTRODUCTION

Lithium salts remain one of the most widely used treatments for bipolar disorder especially in the manic phase [1]. The mechanisms involved probably include reduction in free inositol and effect on sodium channels [2]. There are a variety of side effects noted with lithium therapy including neurotoxicity, thyroid problems and skin rashes or acne and therapeutic drug level monitoring is warranted with lithium [3]. Lithium induced ototoxicity has been demonstrated in various animal studies though case reports in human subjects are anecdotal [4]. We report here a case of sensori-neural deafness that started after lithium therapy and was induced by the drug.

CASE REPORT

A 16 year old right handed girl studying in standard 12 was brought to the out patient clinic of the psychiatry department by her parents with chief complaints

of altered behaviour since the past 3 years in the form of talking excessively and inappropriately, talking big about everything, increased goal directed activities, talking excessively in English while her mother tongue was Marathi, grooming excessively and beautifying herself and with decreased sleep and increased energy.

The patient was apparently alright 3 years back when she started getting up early in the morning before 2-3hours prior to her usual wake up time and would start studying though there was no exam approaching. Parents first neglected this behavior of the patient and were happy that she was studious till 3 months ago when she started claiming that God has visited her and asked her to study hard, started talking in English with which she was not so familiar, used to sing songs the whole day along with excessive grooming. She became hyper-religious and was praying to God all the time. Later she started claiming that she wanted to marry a boy from her class who also loves her but parents found it to be a false statement. Her parents reprimanded her for the same after which she became irritable with frequent anger outbursts and aggressive episodes.

With these complaints we made a diagnosis of bipolar disorder current episode mania and started the patient on Olanzapine 20mg/day, Lithium Carbonate 600mg/day Haloperidol 15mg/day and Trihexyphenidyl 4mg/day. Lithium was later increased to 800mg per day. The patient improved over a period of 10days but developed extra pyramidal reactions hence haloperidol was stopped. Within the next 2months she was 90% better. The patient took medicines for 6months and then discontinued them on her own due excessive sedation. After a year of the 1st episode the patient again presented with easy irritability, smiling inappropriately and hearing voices of God. The diagnosis revised to schizoaffective disorder and the patient was restarted on medicines. We continued Lithium 800mg. The patient was better in a month and stopped medication again. It was also noted that the patient used to self medicate herself, in a way that she would take 800mg of lithium whenever she used to feel irritable and then she would decrease it to 400mg on improvement.

Since 3 months the patient started complaining of difficulty in hearing in both ears which gradually increased in severity. The patient mentioned that she could not hear people speaking in soft voices and they had to speak loud for her to hear. We referred here to the otolaryngology department to rule out any organic cause for the hearing loss. On an audiogram she was found to have mild to moderate sensorineural hearing loss (SNHL) bilaterally. The etiology for the SNHL was not found and after extensive investigation the patient was referred back to us with a diagnosis of Drug induced (Lithium) SNHL. We gradually tapered lithium and added sodium valproate. After 2months of stopping Lithium patient reported 95% improvement in her hearing difficulty. She is well maintained from a psychiatric point of view presently. Audiogram which was repeated was reported to be normal.

DISCUSSION

Hearing loss with lithium is rare and the mechanism is not well understood. There is evidence that hair cells modulate auditory transduction by their mechanical properties which presumably are controlled by efferent neurones and regulated by the levels of intracellular calcium [5]. In a number of biological systems such as cochlear hair cells, these calcium levels are controlled by inositol triphosphate (IP3), the second messenger of the phosphoinositide cascade [6]. Since lithium also exerts a profound alteration in phosphoinositide cascade by inhibiting the conversion of inositol-1-phosphate into myo-inositol by the inhibition enzyme inositol-1 –

phosphatase, a lithium-induced perturbation of the phosphoinositide cascade within the inner ear may be the cause of this hearing loss [7]. It is also suggested that duration of lithium treatment and daily dosage may be involved in alterations of wave latency [8]. Sometimes hearing complaints in a psychiatric patient may be thought to be part of hallucinatory behaviour and may not be investigated further. It is noteworthy that we be aware of this side effect of lithium as it is a drug used quite regularly in psychiatric patients and we must be vigilant whenever hearing complaints arise in a case on lithium.

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