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Managing drop attacks in patients with Ménière's disease

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Abstract

Objective. Drop attacks are a rare, debilitating symptom of Ménière's disease that affect an individual's physical and mental health. The aim of this series was to assess the response to treatment regimens in patients presenting with drop attacks.

Methods. A retrospective case series of 8 patients with Ménière's disease and drop attacks was followed up for an average of 67 months (range, 17–120 months).

Results. All patients were initially managed with intratympanic steroids, with four patients having a complete response. The four non-responding patients were treated with intratympanic gentamicin, with one patient responding. Three patients were treated with triple canal occlusion. Two patients demonstrated drop attack resolution and one had a partial response. Seven out of 8 patients (87.5 per cent) suffered from depression.

Conclusion. Steroid injections had a 50 per cent success rate in complete resolution of drop attacks. Gentamicin injections and triple semi-circular canal occlusion can bring benefits in patients failing steroid treatment.

Main Article

Alison Lim takes responsibility for the integrity of the content of the paper

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Introduction

Ménière's disease is a progressive, vestibular disease that can affect an individual's hearing and balance.[1] Symptoms are often episodic and include tinnitus, hearing loss and vertigo. Drop attacks, also called Tumarkin attacks, are a rare, but severe, symptom of Ménière's disease.[2] These attacks are often described by patients as suddenly being knocked to the ground, without loss of consciousness, with a sudden and violent movement of the visual environment preceding the fall.[2]

Ménière's disease can be treated through a variety of regimens, namely lifestyle changes, medication, such as diuretics and beta-histine, and intratympanic steroid injections, which have been widely supported by recent additions to the existing evidence.[3,4] Intratympanic gentamicin can be utilised as a vestibular toxic medication, depending on the patient's hearing threshold. Cognitive therapy may be indicated to address anxiety created by the fear of attacks occurring.[2,3] Following failure to respond to such treatments, further surgical modalities, such as triple semi-circular canal occlusion, labyrinthectomy, endolymphatic duct clipping, vestibular neurectomy and decompressing of the endolymphatic sac could be discussed with the patient.[2,3]

When it comes specifically to drop attacks, there is a lack of reports in the literature, making counselling and managing such patients challenging. Our objective was to systematically assess a group of patients with Ménière's disease presenting with drop attacks and their response to treatment.

Materials and methods

We carried out a retrospective case series of patients with Ménière's disease presenting with drop attacks between 2016 and 2024 in tertiary referral, academic settings.

The clinical records were retrospectively reviewed and anonymised data were collected through electronic patient records. Research ethics were granted by the National Health Service Health Research Authority and Medical Research Council website[5]; the study was approved as an audit.

While we initially identified the patients retrospectively, we prospectively updated the data. We collected patient demographics, including age and sex, hearing test results, type of intervention(s), response to treatment, follow-up period and mental health morbidities, as defined through the notes following mental health specialist assessment.

Hearing data were based on average thresholds at 0.5, 1, 2 and 4 kHz as the national recommended audiological guidelines; hearing data were reported at the time of the presentation and the final appointment. No measurable hearing was shown as an average threshold of 120 dB.

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Table 1. Patient demographics, follow up and hearing outcomes

Patient	Age (years)	Sex	Side	Follow up (months)	Average initial threshold on affected side(s) (dB)	Average recent threshold on affected side (s) (dB)
1	57	M	Right	28	55	91
2	47	F	Bilateral	124	73	68
3	68	F	Left	17	75	85
4	36	M	Right	44	51	51
5	47	F	Left	120	30	120
6	41	F	Right	87	40	60
7	63	F	Bilateral	19	79	Not recorded
8	52	M	Left	95	14	40

M = male; F= female

Intratympanic injections were applied under local anaesthesia; dexamethasone 3.3 mg/ml was used for steroids and gentamicin 40 mg/ml as per local availability. All patients undergoing intratympanic steroid injections received, as induction, a set of two injections one week apart. The number of steroid injections was based on patient response, tolerance to injections and patient wishes. In patients with partial response to the first two intratympanic injections, additional injections were offered and titrated depending on response. Some patients did not have a response to initial steroid injections but wanted to have further steroid injection attempts before exploring gentamicin injections. The number of attempts with intratympanic steroid injection in the non-responders was based on patient tolerance and wishes.

Additional surgical measures discussed with the patients included triple semi-circular canal occlusion and labyrinthectomy. Previous conservative and/or medical regimens used by primary care were not documented because such measures had already failed.

Response to treatment was defined as complete resolution of the drop attacks; partial response was defined as significant improvement but with some residual symptoms that required attention.

Given the set up of the study and the enrolled numbers, we performed a qualitative analysis rather a statistical one.

Results

Patients

We identified a total of eight patients with drop attacks. Patient demographics are displayed in Table 1. In summary, the mean age was 51.4 years and 62.5 per cent of patients (5 cases) were female, with a mean follow-up time of 67 months.

Hearing loss

All patients reported tinnitus, hearing loss, vertigo and drop attacks. Table 1 demonstrates that most participants presented with hearing loss at the time of their diagnosis, with patient 8 being an outlier. Over the follow-up period, 5 (62.5 per cent) of the patients' hearing thresholds deteriorated, 1 (12.5 per cent) remained the same, 1 (12.5 per cent) improved and 1 (12.5 per cent) did not have repeated audiograms documented.

Mental health morbidities

Most patients (7 of 8 cases, 87.5 per cent) had depression documented in their medical history. All patients with depression were treated with anti-depressants and 5 (71.4 per cent) were prescribed selective serotonin reuptake inhibitors.

Response to treatment regimens

Table 2 shows the treatment methods, number of administrations and treatment response for each case. Intratympanic injections were administered in all patients (3.6 injections on average per patient), while 3 patients (37.5 per cent) proceeded with intratympanic gentamicin injection.

Four (50 per cent) of the patients receiving intratympanic steroid injection had a response to treatment. One patient (33.3 per cent) receiving intratympanic gentamicin injections had a response. Three patients (who failed intratympanic gentamicin) underwent triple canal occlusion, two with complete resolution (patients 3 and 4) and one who had partial improvement (patient 5; already had loss of hearing following gentamicin) and while a labyrinthectomy was being considered, the patient has decided to delay such treatment.

Discussion

Main outcomes

A group of patients with Ménière's disease presenting with drop attacks was assessed, showing that intratympanic steroids can result in symptom resolution in half of the examined cases, while additional gentamicin injections only improved symptoms in one out of four patients. In patients resistant to intratympanic treatment, we favoured triple semi-circular canal occlusion that can also, potentially, preserve hearing, and we discussed labyrinthectomy. An open-minded, step-by-step approach is favoured by the authors and reflects on the presented results. Interestingly, depression was very common amongst the examined group, which could show (1) the impact of the severity of the disease on the individual's mental health and (2) the effect of the mental health status on the patient's presentation and potentially symptom severity perception. Given how rare and sporadic the reports on drop attacks are, these results can help with counselling and treatment decision making.

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Table 2. Treatment method, number of administrations and response for each patient

Patient	Intratympanic steroid administration	Treatment response	Intratympanic gentamicin administration	Treatment response	Triple canal occlusion administration	Treatment response
1	2×	No	1×	Yes		–
2	6×	Yes		–		–
3	3×	No	3×	No	Yes	Yes
4	5×	No	2×	No	Yes	Yes
5	5×	No	6×	No	Yes	Partial*
6	2×	Yes		–		–
7	2×	Yes		–		–
8	4×	Yes		–		–

*Partial refers to residual symptoms

The role of intratympanic injections in Ménière's disease drop attacks

Intratympanic injections of corticosteroids or gentamicin are commonly used in Ménière's disease. A randomised, double-blind trial in the UK suggested that gentamicin could reduce the mean number of vertigo attacks across 6 months by 87 per cent, and methylprednisolone could reduce them by up to 90 per cent.[4] Of the eight patients who received intratympanic dexamethasone injections in this review, four reported an excellent improvement in their symptoms while the others reported no change. These results indicate a significant role of intratympanic steroids, but they may be less effective in this cohort than in the general Ménière's disease group.

Intratympanic steroid injections are a well-tolerated treatment with minimal risks. One study reports the most common adverse effect recorded was a minor ear infection from which 7 per cent of the participants suffered.[4] Of the four patients who received gentamicin injections, one reported a significant improvement in symptoms. It must be considered that gentamicin is ototoxic, in addition to vestibulotoxic, so hearing thresholds must be considered when utilising intratympanic gentamicin therapy.

The role of triple semi-circular canal occlusion

Triple semi-circular canal occlusion is a surgical procedure that can be used when Ménière's disease is refractory and other treatment methods have failed. This treatment is potentially hearing-sparing, but patient 5 was deaf in the operated ear at the time of their procedure.[6] One study reported that at 2 years following triple semi-circular canal occlusion, all vertigo symptoms could be classed as either 'completely' (81.6 per cent) or 'substantially' (18.4 per cent) controlled in 49 Ménière's disease patients.[7] Another case-based study that utilised the Dizziness Handicap Inventory showed decreases in scores one year post-operation.[6] This information suggests that triple semi-circular canal occlusion can be an excellent treatment option for refractory Ménière's disease. Because of the invasive nature of this procedure, it should be considered after other more conservative options have failed.[6] We did not have any patients undergoing labyrinthectomy or further surgical procedures in this group.

Drop attacks and mental health status

We found a high proportion of concurrent depression in Ménière's disease (7 of 8 cases, 87.5 per cent). The relationship between Ménière's disease and depression requires further assessment to establish if there is a pathophysiological predisposition for patients with depression developing Ménière's disease or if the symptoms of Ménière's disease can contribute to depression. Previous literature reports depression is present in around 45.9 per cent of patients with Ménière's disease.[4] In this cohort with Ménière's disease and drop attacks, the prevalence of depression was higher, at 87.5 per cent.[8] The fear of an attack occurring while in public or socialising can be crippling and result in patients seldom leaving their homes. It has therefore been suggested that ENT physicians should have a low threshold to screen patients with Ménière's disease for depression so that they can be referred to appropriate services.[4] There has been some evidence that indicates that selective serotonin reuptake inhibitors can be effective in the treatment of Ménière's disease.[6] One study showed that three patients' vertigo symptoms improved following the commencement of sertraline (50 mg/day). However, this therapy had no positive impact on their hearing thresholds.[6]

Limitations and strengths

This study is limited by its retrospective, observational nature as well as the small patient number. This potentially hinders the scale and value of conclusions drawn in this study. However, drop attacks are a rare presentation and there is limited evidence specifically focusing on Ménière's disease patients with drop attacks. In addition, the systematic assessment, long follow-up period and prospectively updated data add to the existing literature.

- Drop attacks are a rare and debilitating symptom of Meniere's disease that affect an individual's physical and mental health
- Complete resolution of drop attacks was seen in 50 per cent of patients treated with intratympanic steroid injection
- In patients not responding to intratympanic steroid injection, intratympanic steroid injection and triple canal occlusion can offer symptomatic control
- Patients should have assessment and treatment for their mental health because depression was seen in 87.5 per cent of the patients in this case series

Conclusion

Ménière's disease with drop attacks is a rare but debilitating condition. Steroid injections appear to be a reasonable first-line therapy

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for patients with this diagnosis, knowing that the response rates are lower than in the generic Ménière's disease group. Additional treatment regimens, such as gentamicin injections and triple semicircular canal occlusion, can bring benefits in a step-by-step approach. Emphasis on the patient's mental health should not be overlooked.

Competing interests. None declared

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