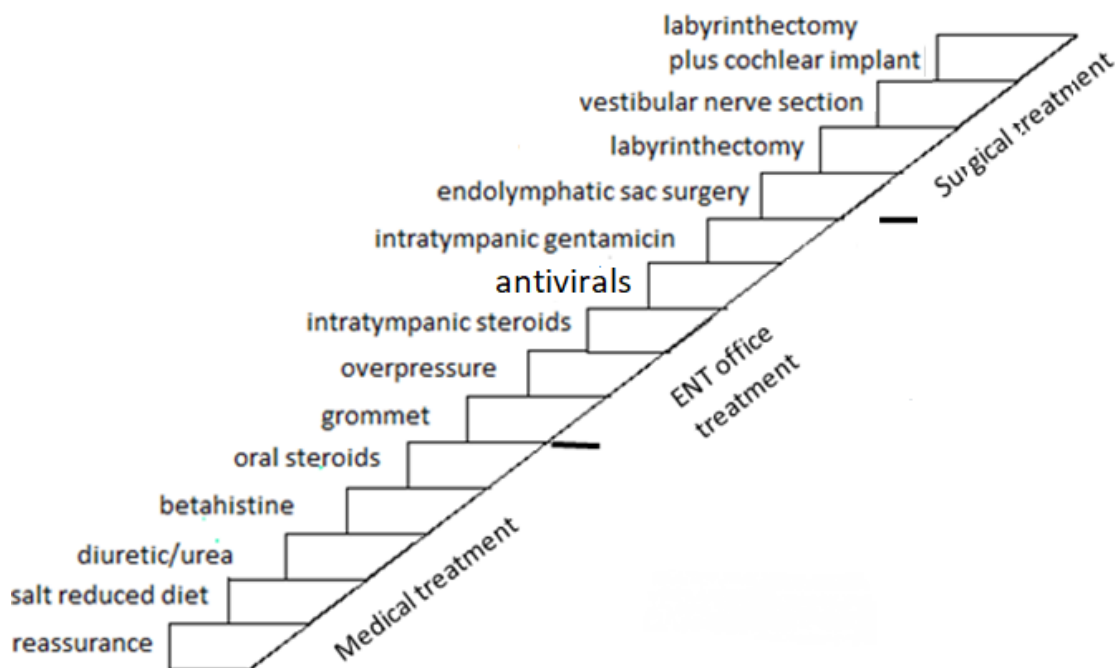


THE MENIERE'S TREATMENT LADDER

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After a diagnosis of Meniere's disease has been established, the family doctor or the specialist will consider the most appropriate treatment. The 'treatment ladder' shows steps that are usually taken in Australia from the most benign therapies to the most radical surgery. I will be writing brief explanations about each group of steps along the treatment ladder.



CI - cochlear Implant
VI - Vestibular Implant

The medical treatments, introduction

After suffering fearsome attacks of vertigo preventing a normal family and working life, the newly diagnosed sufferer may demand surgical treatments but it should be remembered that the final outcome may be better if surgery is avoided. Meniere's disease sufferers must remember that the condition will eventually 'burn out' leaving some hearing and balance in the affected ear. There is always 'a light at the end of the tunnel' although the problem is how long is the tunnel.

'Burn out' is the most usual end point of the disease. At this stage the balance organ has lost its re power and has become so weak that it cannot cause severe attacks.

The hearing no longer fluctuates and there is a severe hearing loss in the affected ear. The tinnitus remains and can bother some people much more than others especially if they are unable to ignore it. Tinnitus is rather like a noisy refrigerator – some people completely forget it is there while others find it intolerable. The feeling of blockage in the ear usually fades away at burn out. Modern hearing aids are usually effective in restoring some useable hearing and in lessening any tinnitus.

Although sufferers welcome 'burn out', it is not a cure just the end point of the disease. The problem is that 'burn out' may take many years to occur especially if there are prolonged periods of remission.

Medical treatment can be the alleviation of symptoms during an attack or treatments which aim at preventing further attacks occurring. Alleviation during attacks is usually achieved using antiemetics / antinauseants. In Australia, Stemetil™ (prochlorperazine) is usually given either by an injection in the hospital, or by using a suppository (25mg), or by using tablets (each is 5mg). To get an effective oral dose of Stemetil™ at least 4 tablets are required and these may have to be chewed or they can be vomited out too easily. Stemetil™ should be used cautiously as long term therapy because it will cause Parkinsonian-like symptoms. A better oral medication is Zofran™ (ondansetron) which is effective in stopping the nausea and vomiting but does not stop the attack. It is placed under the tongue to dissolve avoiding any tendency to vomit it away. To stop the nausea and vomiting during a Meniere's attack, 8mg is the minimum dose.

The treatment ladder concerns the measures taken to prevent further attacks occurring.

STEP ONE - Reassurance

When the first attack occurs, the sufferer is usually rushed to hospital fearing they have suffered a cerebral event or heart attack. Reassurance that there is not a terminal illness is needed.

Once the diagnosis has been reached, reassurance can help prevent further attacks. Stress and anxiety are believed to precipitate attacks both of Meniere's disease and migraine, although the evidence is only anecdotal. Reassurance should be given that Meniere's disease will not continue to cause attacks for the rest of the person's life. In the early stages, prolonged remissions are common and indeed some fortunate people will never have a flare up of the disease again. In the less fortunate sufferers the attacks will continue often in clusters at intervals, but the attacks will get weaker and weaker until the attacks are barely noticeable. There are treatments available to lessen the frequency and severity of the attacks until a natural 'burn out' occurs. It is very reassuring for the sufferer to know these facts and by lessening the stress and anxiety, a positive start is made.

STEP TWO - A salt reduced diet

It is widely believed that salt (sodium chloride) increases endolymphatic hydrops and can precipitate attacks of vertigo. The concept was introduced in 1932 by Mygind and Dederich⁽¹⁾. Dederich suffered from Meniere's herself and documented how increased dietary salt caused her attacks. Over the years many sufferers have given anecdotal evidence that salt exacerbates their condition. Scientific evidence is not possible as the sufferer would easily know if they were being given salt or not. However Harrison and Naftalin⁽²⁾ did undertake a study when they gave a 5G supplement of salt to the diet of Meniere's sufferers. They showed that this often was followed by an attack of vertigo and there was an increase in the urinary sodium output at the time of the attack. The study had to be concluded as it distressed many of the participants and nowadays I doubt if ethical approval would be given again.

The author is convinced that controlling dietary salt is important and very effective especially in sufferers who had a high salt intake prior to the onset of the condition. Similarly, scientific evidence for reducing sugar, caffeine and nicotine is lacking but many sufferers have found these extra steps to be helpful.

STEP THREE - Diuretics and Urea

Diuretics are medicines that reduce the amount of water in the body. Most diuretics also reduce sodium levels. Diuretics are commonly used to treat high blood pressure and oedema. Klockhoff and Lindblom in 1967⁽³⁾ reported success using hydrochlorothiazide. Subsequent studies also reported success but were criticised for poor design and control. The best designed study using Diazide (hydrochlorothiazide and triamterene)⁽⁴⁾ showed a statistically favourable effect on the vertigo but did not halt the progression of hearing loss or affect tinnitus.

There are significant side effects caused by diuretics. The commonest side effect is postural hypotension, or on standing the blood pressure can fall significantly making the person dizzy. On starting a diuretic the person should not stand up too quickly and often within a few days this side effect seems to lessen. More seriously prolonged use of diuretics can lower potassium which has effects on the heart. After every few months a blood test is necessary and in some cases a potassium supplement is required.

There is no need to restrict water intake. The Japanese have treated Meniere's sufferers by giving them 70ml of plain water per kilogram body weight daily as this lowers sodium which decreases intracellular fluid. This is only helpful when there is a bathroom handy!

Urea is an osmotic diuretic which has a very simple chemical formula $\text{CO}(\text{NH}_2)_2$. It is a major constituent of urine and the fertiliser put on the ground is often made from cattle urine. Those who take urea to control their Meniere's disease will be relieved to know that the urea used medically is made chemically rather than biologically! Urea acts by drawing intracellular fluid into the blood stream and it probably

removes some endolymph. The other osmotic diuretics are glycerol which tastes like diesel oil and isosorbide which tastes sickly sweet. Studies of osmotic diuretics show that the hearing improves temporarily both subjectively and objectively (electrocochleography shows a reduction in the summating potential). Hence urea is given as a diagnostic test for Meniere's because the hearing only improves when endolymphatic hydrops is present.

Usually 30 grams of urea is taken in a minimum amount of fluid as it tastes foul. Excessive urea damages the liver and kidneys so it cannot be given to people with liver or kidney problems. In otherwise healthy people the maximum safe daily dose is 1gram / per kilogram body weight.

A few hardy souls take urea on a daily basis to prevent attacks and to maintain hearing. Most sufferers only use it as a 'Cinderella medicine' which guarantees freedom from attacks for 3-4 hours. It can be used to attend important events such as weddings but when the clock strikes the third time, any protection from vertigo is lost!

STEP FOUR - Betahistine

Betahistine dihydrochloride (SercTM) is a vasodilator; a substance which dilates blood vessels. The use of vasodilators is based on a concept that reduced blood flow in the cochlea results in an accumulation of metabolites and a consequent rise in osmotic pressure causing a transfer of fluid into the endolymph compartment. The stria vascularis is the blood vessel within the endolymph compartment of the inner ear and it is hoped that vasodilatation of this vessel decreases the metabolite accumulation and increases the radial absorption of endolymph.

Based on this theory in the 1950's the cervical sympathetic nerve supply to the ear was destroyed surgically⁽⁵⁾. Apart from its effect on the ear, it also caused constriction of the pupil of the eye, loss of sweating on the same side of the face and a dropping eyelid. It was soon abandoned!

Less dramatically, a vasodilator medication called nictotinic acid was given causing flushing of the face. Betahistine hydrochloride replaced nictotinic acid as it did not cause flushing of the skin and some experimental evidence showed it did have an effect on the blood flow⁽⁶⁾ through the cochlea. However, the original hypothesis that there is a vascular cause of Meniere's disease is in doubt.

Betahistine (Serc[®]) has become the most utilised treatment in Europe. The long term use is supposed to lessen the likelihood of future attacks of vertigo and to halt the loss of hearing. There is no advantage in taking it when an attack is pending or during an attack. The scientific evidence is blurred and the Cochrane review states that 'there is insufficient evidence to say whether betahistine has any effect on Meniere's disease⁽⁷⁾.

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