1. Otoliths Causing Vertigo

What is the evidence for otoliths causing vertigo?

Submitted by: **Don Pinkson, MD,** Guelph, Ontario

There is excellent evidence that otoliths contribute to benign positional paroxysmal vertigo (BPPV). Although the exact mechanism is still partially debated, the presence of otoliths within the semi-circular canals (SCC) is implicated in BPPV. Otoliths do not contribute to other causes of vertigo, such as vestibular neuronitis or Ménière's disease.

BPPV presents as a short duration (around 20 seconds) true vertigo, classically stimulated by a change in head position, and can be associated with nausea and vomiting. Patients can suffer from disequilibrium or a "cloudy" feeling for minutes to hours after the episode; however, the true spinning sensation abates quickly. There are few disorders that cause this pattern of vertigo, and BPPV is by far the most common. The posterior SCC canal is most commonly affected (>70%), due to its postero-inferior position, and canal stimulation results in a geotropic (towards the downward ear), torsional nystagmus.

Most cases of BPPV are idiopathic. Head trauma is the second most common cause, followed by a long list of otologic conditions. It appears that any insult to the inner ear can predispose an individual to this condition, as evidenced by its association with vestibular neuronitis, otosclerosis, otitis media, Ménière's disease, labyrinthitis and ear surgery. Establishing the diagnosis of BPPV in this group may be more difficult, but the key symptoms remain the same.

In the absence of other ear diseases, BPPV is not associated with hearing loss or tinnitus, and vertigo does not last longer than one minute. An audiogram should be obtained if any unusual features are present. The Dix-Hallpike manoeuvre is pathognomonic, although a negative test does not exclude the condition. The remainder of the clinical examination is usually normal. Vestibular function tests are not required for classic cases that respond to initial therapy, but should be considered for recalcitrant symptoms or unusual presentations.

Canalith repositioning physiotherapy, such as the Epley or Semont manoeuvres, is the treatment of choice. These therapies have a success rate of around 90%. Given the short duration of symptoms and the common success of these exercises, vestibulosuppressant medications should be avoided. Surgical therapy, such as posterior SCC occlusion, is very rarely required. The key to successful management of these patients is educating them about the cause, and teaching them repositioning exercises. Patient handouts or online resources (including videos of the manoeuvres on YouTube), will help patients perform these exercises at home and keep their symptoms under control.

Answered by: **Dr. Ben Dixon**

2. Long QT Syndrome

How does one recognize long QT syndrome?

Submitted by: **T.M. Quigg, MD,** Collingwood, Ontario

The QT interval is measured from the onset of the QRS to the end of the T wave, and should be corrected for heart rate with use of Bazett's Formula: (QTc = measured QT / square root of preceding RR interval). A QTc over the 99th percentile is considered abnormally prolonged. In women, an abnormal QTc is > 480 msec, and in men, an abnormal QTc is > 470 msec. QT prolongation, with susceptibility to torsades de pointes ventricular tachycardia, is often due to genetic mutations in potassium and sodium channels; it may be precipitated by medications such as antiarrhythmic drugs, antipsychotics (*e.g.*, haloperidol), methadone, and antibiotics such as erythromycin and clarithromycin. QTc interval should be monitored with discontinuation of these medications, if QTc is > 500 msec.

Answered by: **Dr. Bibiana Cujec**

Reference

1. Drew BJ, Ackerman MJ, Funk M, et al. Prevention of Torsade de Pointes in Hospital Settings: A Scientific Statement from the American Heart Association and the American College of Cardiology Foundation. Circulation 2010;121(8):1-14.

3. Superficial Thrombophlebitis Treatment

In superficial thrombophlebitis, does proximity of a clot to the deep vein system change active treatment, other than the need for follow-up?

Submitted by: Derek Yates, MD, Callander, Ontario

Superficial thrombophlebitis, by which we mean an ultrasound-confirmed case identifying thrombosis within the superficial system alone, is a condition that causes discomfort along the venous distribution, with the rare potential for deep or proximal extension. The majority of cases are successfully managed with local measures and a short course of NSAIDs. For difficult to resolve cases, a short course of prophylactic or full dose low molecular weight heparin (LMWH) may be considered. We will often perform serial ultrasounds to ensure that there is no extension into the deep veins above-the-knee. However, controversy exists regarding the appropriate management of spontaneous lower extremity superficial thrombophlebitis. The 2008 ACCP guidelines give a number of suggestions, such as anticoagulation therapy, but these are not based on strong evidence and these guidelines remark that NSAIDs may also be appropriate therapy.

Of special note, the "superficial femoral vein" is part of the deep venous system, and thrombosis in this vein should be managed as such.

Resource
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Answered by: Dr. Cyrus Hsia and Dr. Leonard Minuk

4. Light Therapy for SAD

What is the effectiveness of light therapy for seasonal affective disorder? Are there any good studies comparing its effectiveness to medical management?

Submitted by: K. Elridge, MD, Peterborough, Ontario

Phototherapy (light therapy) was introduced in 1984 as a treatment for seasonal affective disorder. It tends to be well tolerated by patients. Generally, patients with more prominent hypersomnia as a feature of their seasonal depression may show more robust response to phototherapy. Light therapy may be recommended as a time-limited trial, primarily in outpatients with clear seasonal pattern. In patients with more severe forms of seasonal major depressive disorder, their condition is considered adjunctive to psychopharmacological intervention.

Answered by: Dr. Hany Bissada

Resource
1. [APA] American Psychiatric Association. 2006. Practice Guidelines for the Treatment of Psychiatric Disorders. p 792.

5. Oral Antifungals for Tinea Pedis

When is the use of oral antifungals warranted for tinea pedis? What are the associated risks with newer oral antifungals?

Submitted by: Michal Smialowski, MD, Smithers, British Columbia

Most cases of tinea pedis can be easily treated with topical antifungal agents, which treat the dermatophyte causing the condition. Situations which warrant oral antifungal agents include concomitant onychomycosis, which does not respond to topical antifungal agents, failure of the tinea pedis to respond to an appropriate course of topical antifungal agent, and a severely inflammatory tinea pedis with associated blistering or a widespread hypersensitivity to the dermatophyte (a dermatophytid).

Associated risks with the newer oral antifungal agents such as imidazoles (ketoconazole), triazoles (itraconazole, fluconazole) and allylamines (terbinafine) can be divided into: risks of adverse effects of the drugs themselves, and risks of these drugs producing drug interactions.

Although these classes of antifungal drugs are generally well tolerated, the principle risks of the imidazoles, triazoles and allylamines are gastrointestinal symptoms (*e.g.*, diarrhea, dyspepsia, abdominal pain, nausea and flatulence), dermatologic eruptions (including rash, urticaria and rarely, more severe reactions such as drug-induced lupus, Steven-Johnson syndrome and toxic epidermal necrolysis), headache, liver function abnormalities and rarely, drug-induced hepatitis and blood abnormalities such as agranulocytosis.

Patients need to be warned about potential side effects and should have baseline CBC and LFTs. These tests should be repeated every four to six weeks for as long as the patient is on the drugs.

Drug interactions are more common with imidazoles and triazoles, as they are metabolized in the liver by cytochrome P450 3A4, whereas allyamines are metabolized by cytochrome P450 2D6. Physicians need to be aware of the multiple clinically important drugs that are also metabolized by cytochrome P450 3A4 as concurrent administration of these drugs with oral imidazoles and triazoles can result in decreased metabolism and increased blood levels of the concurrent drugs, with potentially extremely serious sequelae.

Answered by: Dr. Richard Haber

6. Insulin and Other Medications

How do you start a patient with multiple diseases (on different medications), on insulin? How do you proceed with insulin, and what do you stop or adjust regarding his other medications (*e.g.*, antiglycemics)?

Submitted by: I. Abdelmalek, MD, Whitehorse, Yukon Territory

The principles of treatment are the same even when the patient is complex. Treatment must be individualized and targets determined for each patient, including targets for preprandial and postprandial glucose levels, and A1C. The risk of hypoglycemia must be determined, as well as the individual's ability to self-manage their diabetes and monitor their glucose levels. When initiating insulin, there are a number of choices depending on the patient's glucose control throughout the day and the targets chosen for that individual. Often, morning glucose levels are elevated more than at other times of the day, and initiating a basal insulin at bedtime is now becoming the most common practice. Basal insulins include NPH, glargine and insulin detemir. Usually five to ten units of insulin is given at bedtime and titrated (often by one unit per day) to achieve target glucose levels (often 4 to 7 mmol/L). Patients must self-monitor blood glucose one to two times per day, and be taught about hypoglycemia and its treatment. If the patient is on metformin, this is usually continued. If a patient takes sulfonylurea this is often continued, but the dose may have to be adjusted if hypoglycemia occurs during the day. Thiazoledinediones (TZDs) are usually discontinued, but some patients continue use. If the TZD is continued, the risk of weight gain, edema and congestive heart failure is generally greater. TZDs combined with insulin are not a Health Canada approved indication.

Answered by: Dr. Vincent Woo

7. Routine Toxoplasmosis Testing

I would like to know if a routine test for toxoplasmosis is recommended for a pregnant woman exposed to cats?

Submitted by: A. Kayumi, MD, Mississauga, Ontario

The main sources of maternal toxoplasmosis infection are ingestion of contaminated meat or meat products (uncooked or cured), soil-contaminated fruit or vegetables, or contaminated water. Immunocompetent women infected prior to conception almost never transmit toxoplasmosis to the fetus. Routine screening for toxoplasmosis is not recommended in pregnancy, as there is insufficient evidence that prenatal treatment is effective.

Answered by: Dr. Victoria Davis

Resource
1. Lüder CG, Gross U. Toxoplasmosis: from clinics to basic science. Parasitol Today 1998;14(2):43-5.

8. Use of Adrenaline Autoinjectors

If a patient has urticaria and angioedema, with no shortness of breath, should I use an adrenaline autoinjector?

Submitted by: Steve Choi, MD, Oakville, Ontario

This all depends upon the patient's clinical presentation, as well as any prior knowledge of his or her medical history. Chronic urticaria, a fairly common condition, presents as recurrent bouts of hives and swelling occurring on a daily, or almost daily, basis for six weeks or more. This bears no relationship to allergy, thus a flare of this condition does not require use of an autoinjector. In addition, especially in young patients, acute urticaria (with or without angioedema) is commonly triggered by respiratory and gastrointestinal infections, and typically lasts several days to one or more weeks. Other, more serious causes may need to be considered (*e.g.*, urticarial vasculitis, erythema multiforme/Steven-Johnson syndrome, and a drug reaction such as serum sickness with antibiotic use). A patient with a history of one or more days of such a rash, in the absence of acute respiratory symptoms, does not require an autoinjector. The most common situation in which acute isolated urticaria or angioedema may require adrenaline is when the onset is acute (less than two or three hours) in a patient with a known food or drug allergy, or when the patient has a known history of exercise or idiopathic anaphylaxis. If a patient with an unknown history presents in your office with severe, acute (less than three hours of) swelling and hives, and if there are gastrointestinal manifestations (emesis, acute abdominal pain), neurological or cardiovascular symptoms (dizziness, lethargy, hypotension), administering adrenaline would be indicated. If such a patient's sudden urticaria or angioedema were isolated, but severe enough to potentially cause upper airway impingement (face or neck swelling), then adrenaline should also be considered. In summary, the vast majority of cases of isolated urticaria and angioedema do not require use of adrenaline.

Answered by: Dr. Tom Gerstner

9. Moxifloxacin Treatment

Can moxifloxacin be used in the treatment of intrabdominal infection or diverticulitis?

Submitted by: David Hawkins, MD, Westburn, British Columbia

Moxifloxacin (Avelox) is a fluoroquinolone antibiotic that has broad spectrum coverage against aerobic gram-negative bacilli, and also has anaerobic activity. It has good penetration into the gastrointestinal tract, with an acceptable side effect profile. Moxifloxacin is an effective monotherapy option for the treatment of intra-abdominal infection or acute diverticulitis.

Answered by: Dr. Richmond Sy

10. Treating Mild LVH

Do we need to treat mild LVH on echocardiogram in an asymptomatic patient with no risk factors?

Submitted by: Ali Kuni Kilany, MD, Toronto, Ontario

Left ventricular hypertrophy (LVH) is defined as increased LV mass indexed to body surface area and is abnormal if it is > 95 g/m^2 in woman and > 115 g/m^2 in men. LVH may be secondary to increased LV wall thickness (concentric LVH), or an enlarged LV cavity (eccentric LVH). Concentric LVH may be secondary to hypertension, aortic stenosis, hypertrophic cardiomyopathy or athlete's heart. It is very easy to overestimate LV wall thickness on an echocardiogram, due to an over-gained image, or inclusion of RV trabeculation or LV false chord as part of septal thickness. An echocardiogram cannot distinguish LVH from other causes of increased LV wall thickness, such as amyloidosis and Fabry's disease. Clinical correlation is essential.

In an asymptomatic patient with mild LVH for no apparent reason (no hypertension, aortic stenosis or intensive exercise regimen), no treatment is necessary, as this may be an error in measurement, particularly if the ECG is normal. A more accurate test for measurement of LVH is cardiac magnetic resonance.

Answered by: Dr. Bibiana Cujec

11. Methylphenidate for Refractory Depression

In the geriatric population, is it safe to prescribe methylphenidate for refractory depression already treated with selective serotonin reuptake inhibitors (SSRIs)?

Submitted by: Nicolas Boudreault, MD, Lac-Etchemin, Quebec

In past years, case reports of the effectiveness of adding psychostimulants, such as methylphenidate and dextroamphetamine, to selective serotonin reuptake inhibitors (SSRI) in treatment-resistant depression have been reported; however, no controlled studies are available to confirm these reports. More recently, case reports and open clinical trials have also raised the possibility of the benefit of stimulants as an augmentation tactic, in cases of clinical depression that have failed to respond fully to sequential monotherapy in terminally ill patients and the geriatric population.

Answered by: Dr. Hany Bissada

12. CIDP Treatment

What is the treatment for chronic inflammatory demyelinating polyneuropathy (CIDP)?

Submitted by: Robert Ecclestone, MD, Langley, British Columbia

Intravenous immune globulin (IVIG), plasma exchange and other immunosuppressant drugs are among the commonly used treatments for chronic inflammatory demyelinating polyneuropathy (CIDP). IVIG is given in divided doses over four to five consecutive days for a total dose of 2g per kg of body weight. Some experts suggest that total infusion may be given in two large doses. For CIDP, the maintenance doses may be required at monthly intervals to maintain the clinical response. Side effects of IVIG treatment include renal failure, aseptic meningitis and anaphylaxis, in IgA-deficient patients. If the patients do not have a significant response to IVIG treatment, then consideration can be given to the addition of steroids, cyclophosphamide, cyclosporin or methotrexate. Many clinical trials support the use of IVIG in CIDP, hence with time, this has become the first line treatment.

Answered by: Dr. Abdul Qayyum Rana

13. Thyroid Nodule Work-up

What is a practical work-up for thyroid nodules?

Submitted by: **Mark D. Poulin, MD,** Montreal, Quebec

The most important part of the work-up is to rule out malignancy. About 5% of all thyroid nodules carry the risk of thyroid cancer. The history and physical exam will help to determine the likelihood that a nodule is malignant. Risk factors include male gender, age extremes, rapidly growing nodule, family history of thyroid cancer, history of radiation therapy to the head or neck, compressive symptoms (hoarseness, dyspnea, dysphagia), large nodule (≥ 4cm), firm/hard or fixed nodule, and neck lymphadenopathy. The next test to do is a TSH. If TSH is normal or high and the nodule is > 1 to 1.5 cm, one needs to do a fine needle aspiration (FNA) biopsy. If the TSH is low, then a thyroid scan should be done to determine if the nodule is functioning, since these are almost always benign. If the thyroid scan shows the nodule to be cold (non-functioning), then an FNA should be done. There are also some ultrasound characteristics which show high risk features of nodules. Regardless, all these nodules need to be followed clinically, along with periodic TSH, ultrasound monitoring and a repeat FNA, based on clinical and radiographic findings.

Resource
1. Hegedüs L. Clinical Practice. The Thyroid Nodule. N Engl J Med 2004;351(17):1764-71.

Answered by: **Dr. Ally Prebtani**

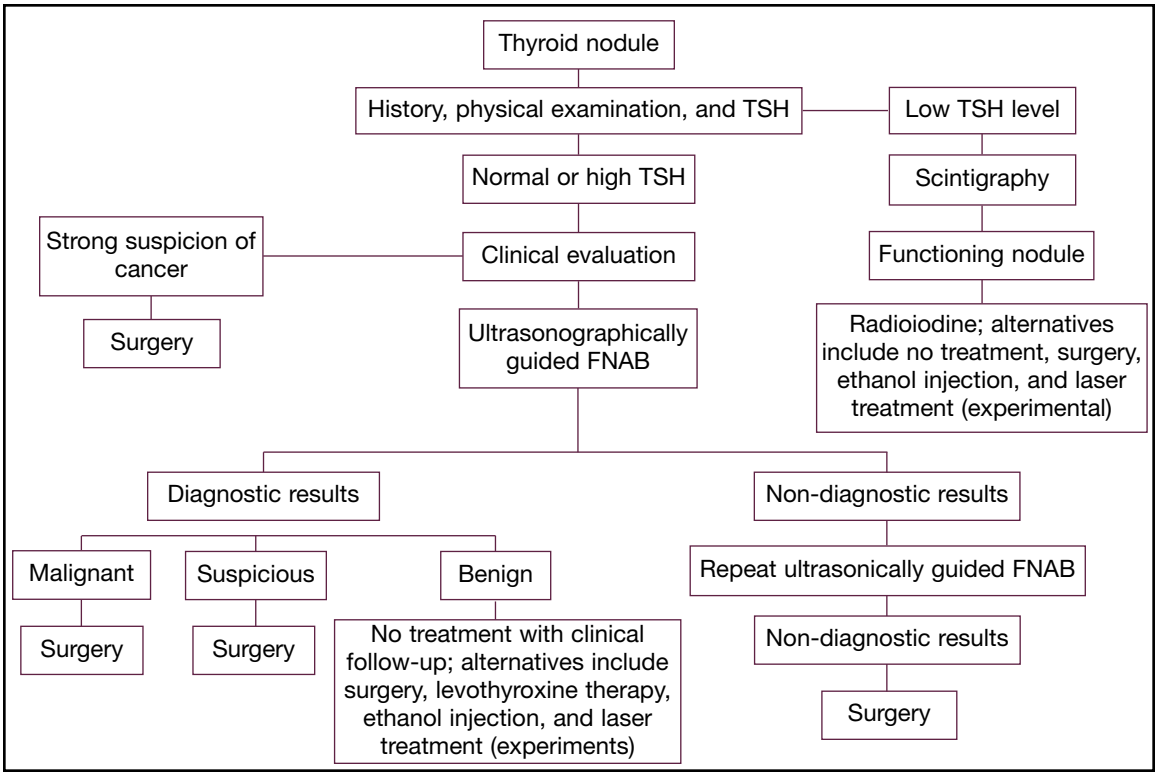

Figure 1: Thyroid Nodule Work-up

14. Indications for Hiatus Hernia Surgery

What are the indications for surgery for a severe, and symptomatic hiatus hernia? The patient is already on a PPI, eating small meals and propping the head up in bed.

Submitted by: P. Hawley, MD, North Vancouver, British Columbia

A hiatus hernia is caused by the loosening of the phrenoesophageal membrane, resulting in the displacement of the lower esophageal ligament away from its diaphragmatic attachments. All four types of hiatus hernia are associated with gastroesophageal reflux disease (GERD).

First line treatment for GERD is medical management with PPIs and lifestyle modifications, particularly weight loss and elevation of the head of the bed when sleeping. Failure of this initial management suggests that either disease is severe, or the diagnosis is incorrect; further investigation should follow to objectively document the presence of GERD.

Esophagoscopy in GERD may show a mucosal break, Barrett's esophagus or a peptic stricture, in the absence of malignancy. The gold standard to diagnose GERD is a positive 24-hour ambulatory esophageal monitoring study in the absence of pharmacologic therapy. Full preoperative workup includes both of these tests, in addition to esophageal manometry to rule out esophageal dysmotility, and esophagogram to delineate the anatomy of the distal esophagus and proximal stomach.

The Society of American Gastrointestinal and Endoscopic Surgeons recommends considering surgical therapy for patients with an objectively confirmed diagnosis of GERD in the following situations:[1]

- Failure of medical management (inadequate symptom control despite maximal medical therapy, need for escalating medication dosage, or medication side effects)
- Patient desire for surgery despite successful medical management due to quality of life considerations (lifelong need for medication, young age, financial burden, *etc.*)
- GERD complications (*e.g.*, esophageal stricture, Barrett's esophagus without high-grade dysplasia) unresponsive to medical therapy
- Extra-esophageal manifestations (*e.g.*, asthma, hoarseness, cough, aspiration)

Studies of long-term outcome show that fundoplication successfully relieves typical GERD symptoms (heartburn, regurgitation and dysphagia) in 80 to 90% of patients after five years, and results in normalization of pH tracing in over 90% of patients.[2] The three primary predictors of successful surgical management are an abnormal preoperative pH score, significant response to acid-suppressing therapy, and typical symptoms. Patients with atypical symptoms (cough, asthma) have a less-predictable outcome, with symptomatic improvement in only two-thirds of patients. Dx

References
1. 2010. Guidelines for the Surgical Treatment of Gastroesophageal Reflux Disease (GERD). [Internet]. Society of American Gastroenterologists and Endoscopic Surgeons (SAGES). Available at: <http://www.sages.org/publication/id/22/>
2. Jobe BA, Hunter JG, Peters JH. Chapter 25. Esophagus and Diaphragmatic Hernia. Brunicardi FC, Anderson DK, Billiar TR, et al, editors. Schwartz's Principles of Surgery. 9th ed. Available at: <http://www.accesssurgery.com/login.ezproxy.library.ualberta.ca/content.aspx?aID=5031992>

Answered by: Dr. Robert Bailey and Dr. Marta McCrum