Casual Friday Series

Vertigo: Functional Approaches

A BIOGENETIX CLINICAL PRESENTATION

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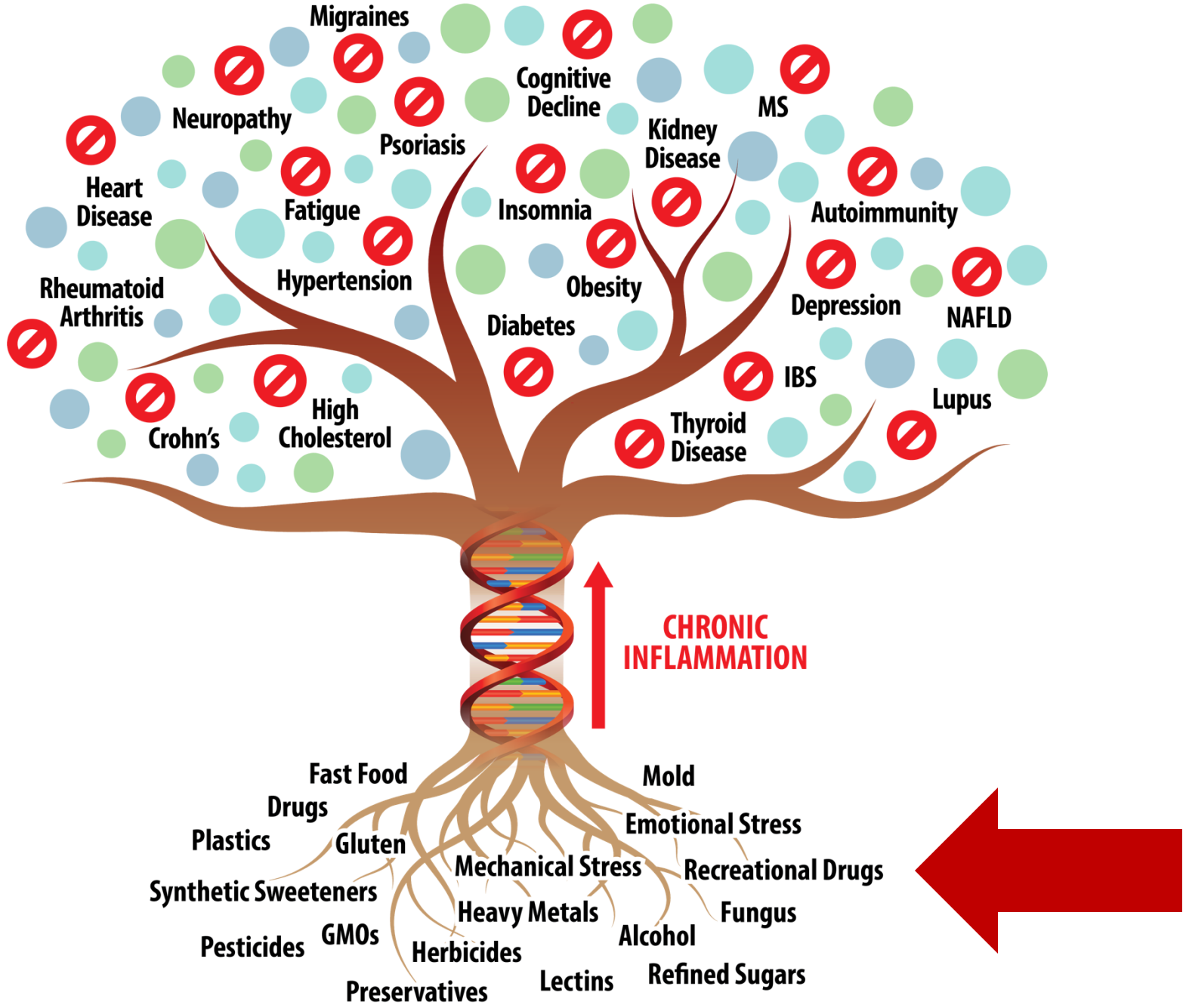
Migraines
Neuropathy
Psoriasis
Cognitive Decline
MS
Kidney Disease
Heart Disease
Fatigue
Insomnia
Autoimmunity
Hypertension
Obesity
Depression
NAFLD
Rheumatoid Arthritis
Diabetes
IBS
Lupus
Crohn's
High Cholesterol
Thyroid Disease
CHRONIC INFLAMMATION
Fast Food
Drugs
Plastics
Gluten
Synthetic Sweeteners
Pesticides
GMOs
Herbicides
Preservatives
Lectins
Refined Sugars
Alcohol
Heavy Metals
Mechanical Stress
Mold
Emotional Stress
Recreational Drugs
Fungus

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Vertigo of a Peripheral Etiology

Vertigo is most often caused by a dysfunction in the vestibular system from a peripheral or central lesion. [1] Peripheral etiologies include the more common causes of vertigo, such as benign paroxysmal positional vertigo (BPPV) and Ménière disease.[3] BPPV results from calcium deposits or debris in the posterior semicircular canal and causes frequent transient episodes of vertigo lasting a few minutes or less.[1] Unlike BPPV, patients with Ménière disease often experience tinnitus, hearing loss, and aural fullness in addition to vertigo. Endolymphatic hydrops is a distinct pathologic feature of Ménière disease.[4] Symptoms of Ménière disease result from an increased endolymph volume in the semicircular canals. Two additional distinct causes of peripheral vertigo include acute labyrinthitis and vestibular neuritis. Both arise from inflammation, often caused by a viral infection.[1] Another viral-induced cause of vertigo is Herpes zoster oticus, also known as Ramsay Hunt syndrome.[5] In Ramsay Hunt syndrome, vertigo results from the reactivation of latent Varicella-zoster virus (VZV) in the geniculate ganglion, leading to inflammation of the vestibulocochlear nerve. The facial nerve is often involved as well, resulting in facial paralysis.[1] Less common peripheral causes include cholesteatoma, otosclerosis, and a perilymphatic fistula. Cholesteatomas are cyst-like lesions filled with keratin debris.[6] Cholesteatomas most often involve the middle ear and mastoid. Otosclerosis is characterized by abnormal growth of bone in the middle ear, which leads to conductive hearing loss and may affect the cochlea, also causing tinnitus and vertigo.[7] A perilymphatic fistula is another less common cause of peripheral vertigo and results from trauma.[1]

https://www.ncbi.nlm.nih.gov/books/NBK482356/

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Vertigo of a Central Etiology

Central etiologies of vertigo should always be considered in the differential. Ischemic or hemorrhagic strokes, particularly involving the cerebellum or vertebrobasilar system, are life-threatening and must be ruled out by history, physical, and other diagnostic tests if warranted.[8][1] Other more serious central causes include tumors, particularly those arising from the cerebellopontine angle.[9] Examples of such tumors include a brainstem glioma, medulloblastoma, and vestibular schwannoma, which can lead to sensorineural hearing loss as well as vertiginous symptoms.[1] Vestibular migraines are a common central cause of vertigo. They are characterized by unilateral headaches associated with other symptoms, including nausea, vomiting, photophobia, and phonophobia. Finally, multiple sclerosis has been associated with both central and peripheral causes of vertigo. Multiple sclerosis can cause vertigo by developing demyelinating plaques in the vestibular pathways.[10] BPPV is a common peripheral cause of vertigo in patients with multiple sclerosis.[1] Other causes can lead to vertigo. These include medication-induced vertigo and psychologic disorders, including mood, anxiety, and somatization. Medications associated with vertigo include anticonvulsants such as phenytoin and salicylates.[1]

https://www.ncbi.nlm.nih.gov/books/NBK482356/

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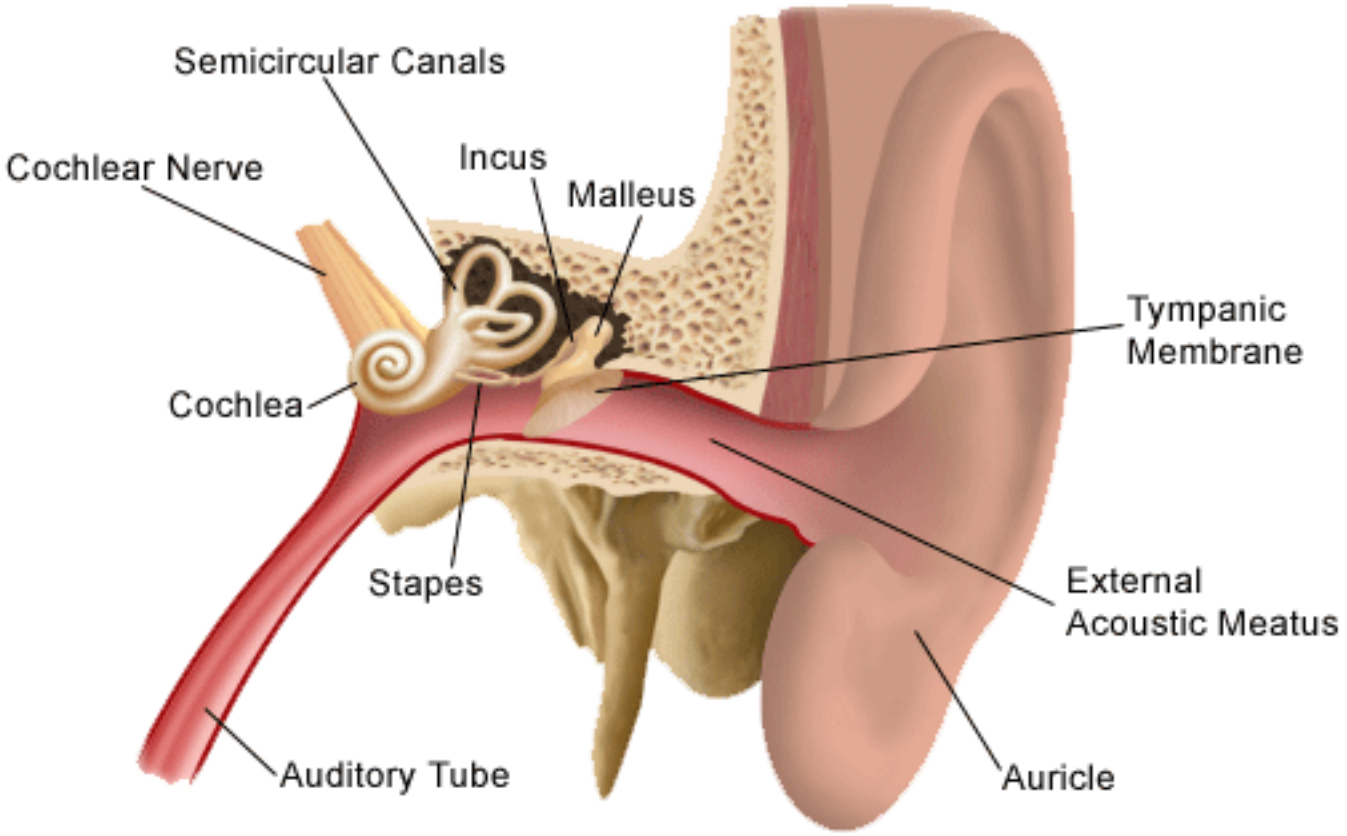
Benign Paroxysmal Positional Vertigo: BPPV



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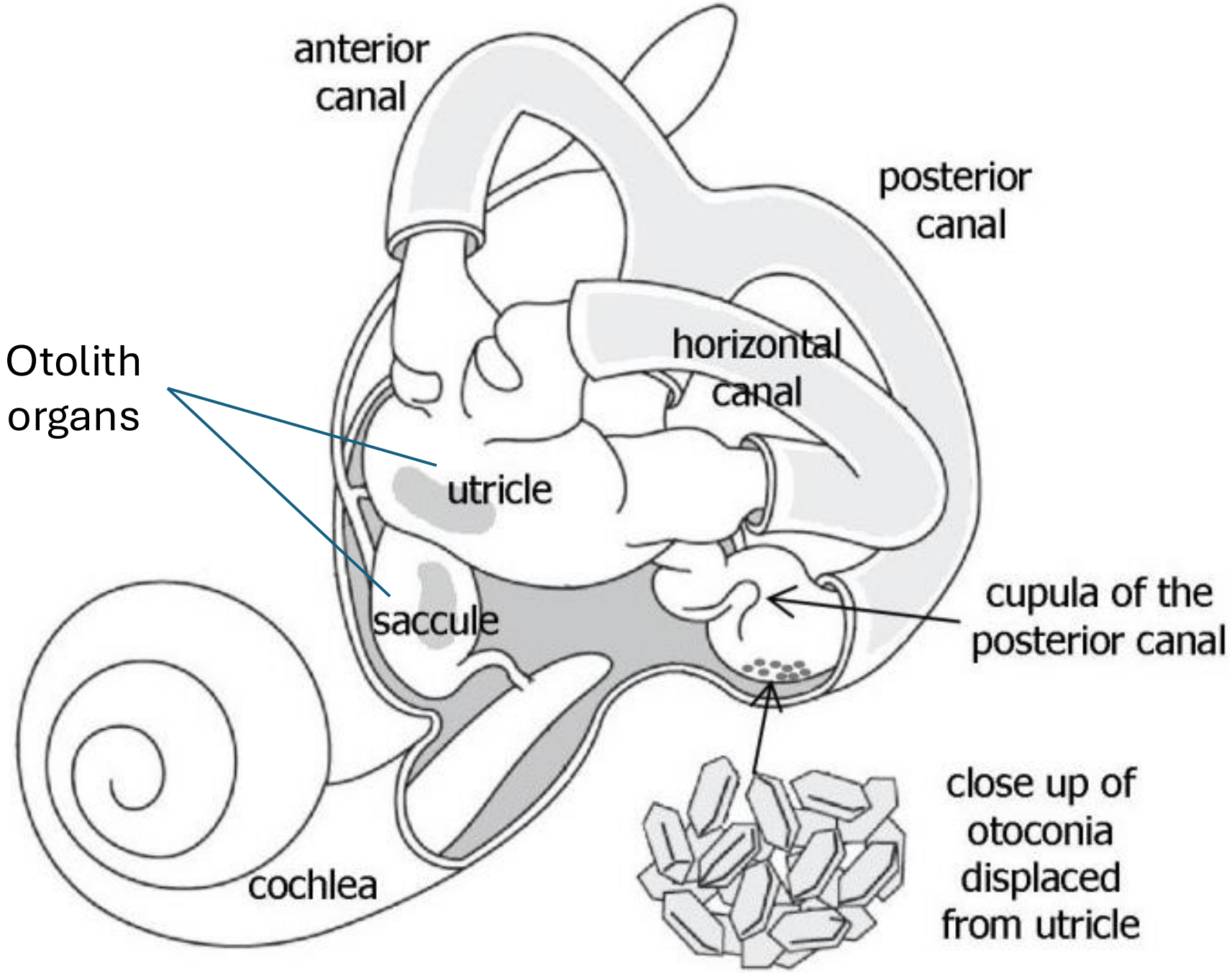

https://vestibular.org/wp-content/uploads/2012/03/inner-ear-anatomy_graphic-only.jpg

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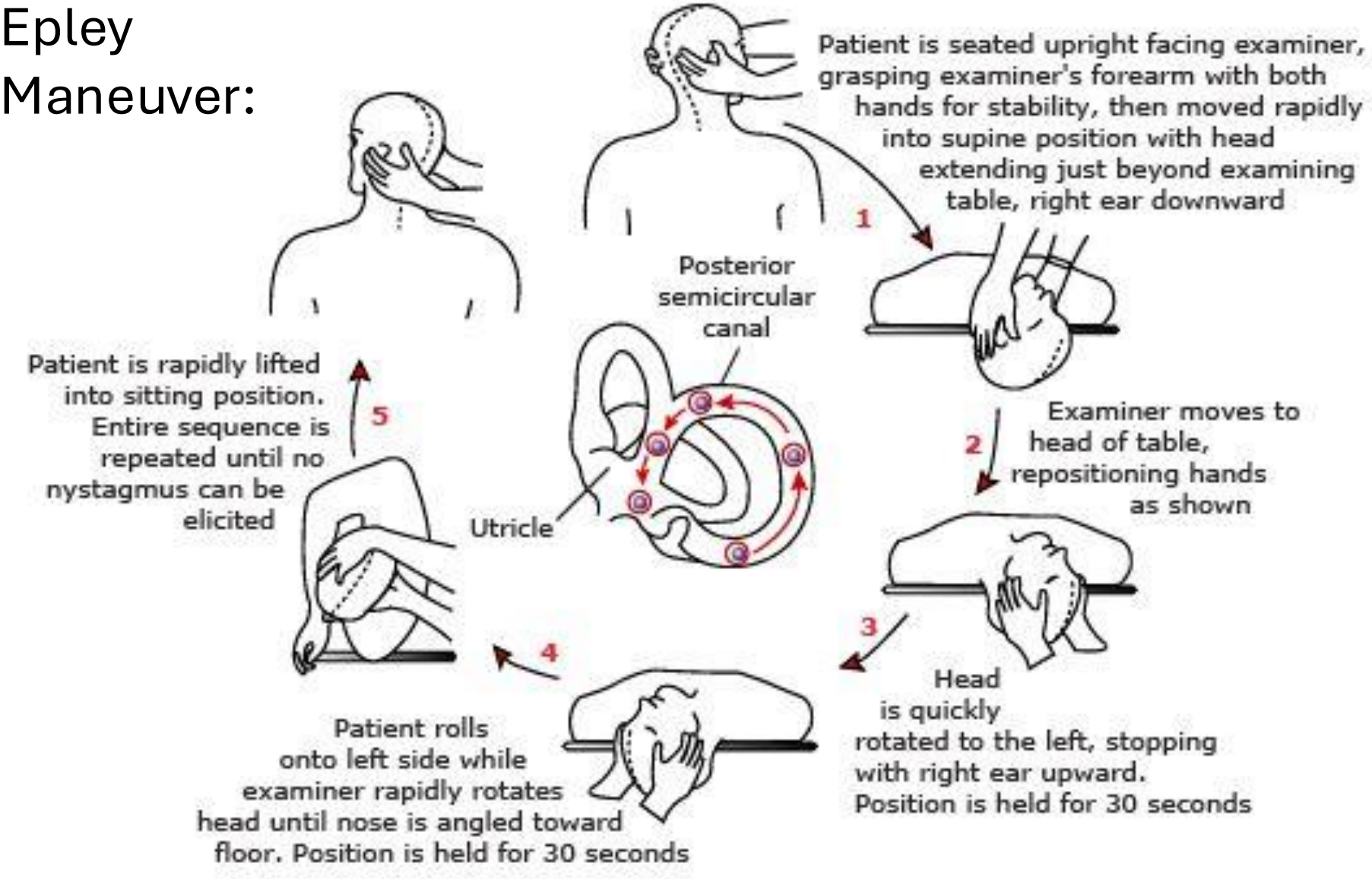
Epley Maneuver:



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Functional Considerations

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J Pharmacol Pharmacother. 2013 Dec;4(Suppl1):S104–S109. doi: 10.4103/0976-500X.120969

Vertigo/dizziness as a Drugs' adverse reaction

Serafina Chimirri [1], Rossana Aiello [1], Carmela Mazzitello [1], Laura Mumoli [1], Caterina Palleria [1], Mariolina Altomonte [1], Rita Citraro [1], Giovambattista De Sarro [1,✉]

Table 1.

Characteristics of peripheral and central vertigo

Characteristics	Peripheral vertigo	Central vertigo
Starting	Sudden	Insidious
Clinical picture	Paroxysmal	Continuous
Intensity	Maximum initial	Mild
Duration	Minitus/hours	Days / weeks
Vertical nystagmus	Absent	Common
Influence movements	Remarkable	Mild or no
Tinnitus, deafness	Common	Absent

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Vertigo/dizziness as a Drugs' adverse reaction

Table 2.

Classification of drugs that may cause vertigo or dizziness as an ADR

Antibiotics		
Quinolones and fluoroquinolones	Aminoglycosides	Macrolides
Cinoxacin	Kanamycin	Erythromycin
Levoxacin	Amikacin	Azithromycin
Ciprofloxacin	Tobramycin	Clarithromycin
	Gentamycin	
Diuretics		
Ethacrynic acid, Furosemide, Hydrochlorothiazide		
Anti-hypertensive		
ACE inhibitors	ARBs	Calcium-channel blockers
Enalapril	Irbesartan	Lacidipine
Zofenopril		Amlodipine
		Nicardipine

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Mucolytics		
Carbocysteine		
Anti-inflammatory		
NSAIDs	Salicylates	Analgesics
Ibuprofen	Acetylsalicylic acid	Acetaminophen
Celecoxib		
Diclofenac		
Disketoprofene		
Ketorolac		
Naproxen		
Anti-depressants		
Mirtazapine, Paroxetine, Sertraline, Amitriptyline, Doxepin, Trazodone		

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PM

Cholesterol-lowering
  Simvastatin, Atorvastatin
Anti-fungals
  Amphotericin B, Flucytosine, Itraconozole, Flucanazole
Anti-malarials
  Chloroquine
Heavy metals
  Arsenic, Mercury, Cis-platinum
Anti-psychotics
  Chlorpromazine, Clozapine, Thioridazine
Parkinsonian drugs
  Bromocriptine, Levodopa/carbidopa

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Functional Considerations

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Medical and Non-Stroke Neurologic Causes of Acute, Continuous Vestibular Symptoms

Jonathan A Edlow [1], David Newman-Toker [2]

The most common electrolyte abnormality likely to present with persistent dizziness is almost certainly hyponatremia. Typical presentations involve a combination of dizziness, nausea, and vomiting,[28] so this clinical presentation might initially be confused for AVS due to stroke or inner ear disease. Care should be taken when correcting severe hyponatremia, due to the risk of inducing an osmotic demyelination syndrome.[29] Hypernatremia is more likely to cause dizziness via dehydration and orthostatic hypotension,[30] as the typical central nervous system symptoms of hyperosmolality are those of altered mental status, lethargy, irritability, restlessness, seizures, muscle twitching, hyperreflexia, and spasticity alongside fever, nausea or vomiting, labored respiration, and intense thirst.[31] Hypokalemia or hyperkalemia are also more likely to cause dizziness via bradycardia resulting in hypotensive effects.[32,33] Dizziness and vertigo have been reported as symptomatic manifestations of hypocalcemia, hypercalcemia, hypophosphatemia, hyperphosphatemia, and hypomagnesemia,[34–38] although mixed electrolyte disturbances or co-morbid diseases (e.g., renal failure, thyroid dysfunction), sometimes cloud inferences about causal relationships.

Example:

72 yo male, 225 lbs, 5’10”

DM2
HBP
Hypercholeterolemia

HCTZ
Lisinopril
Pantoprazole
Atorvastatin
Metformin
Glipizide
Januvia

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Example:

19 yo female, 120 lbs, 5’2”

POTS
Fatigue
Tinnitus
Rash

No pharmaceuticals

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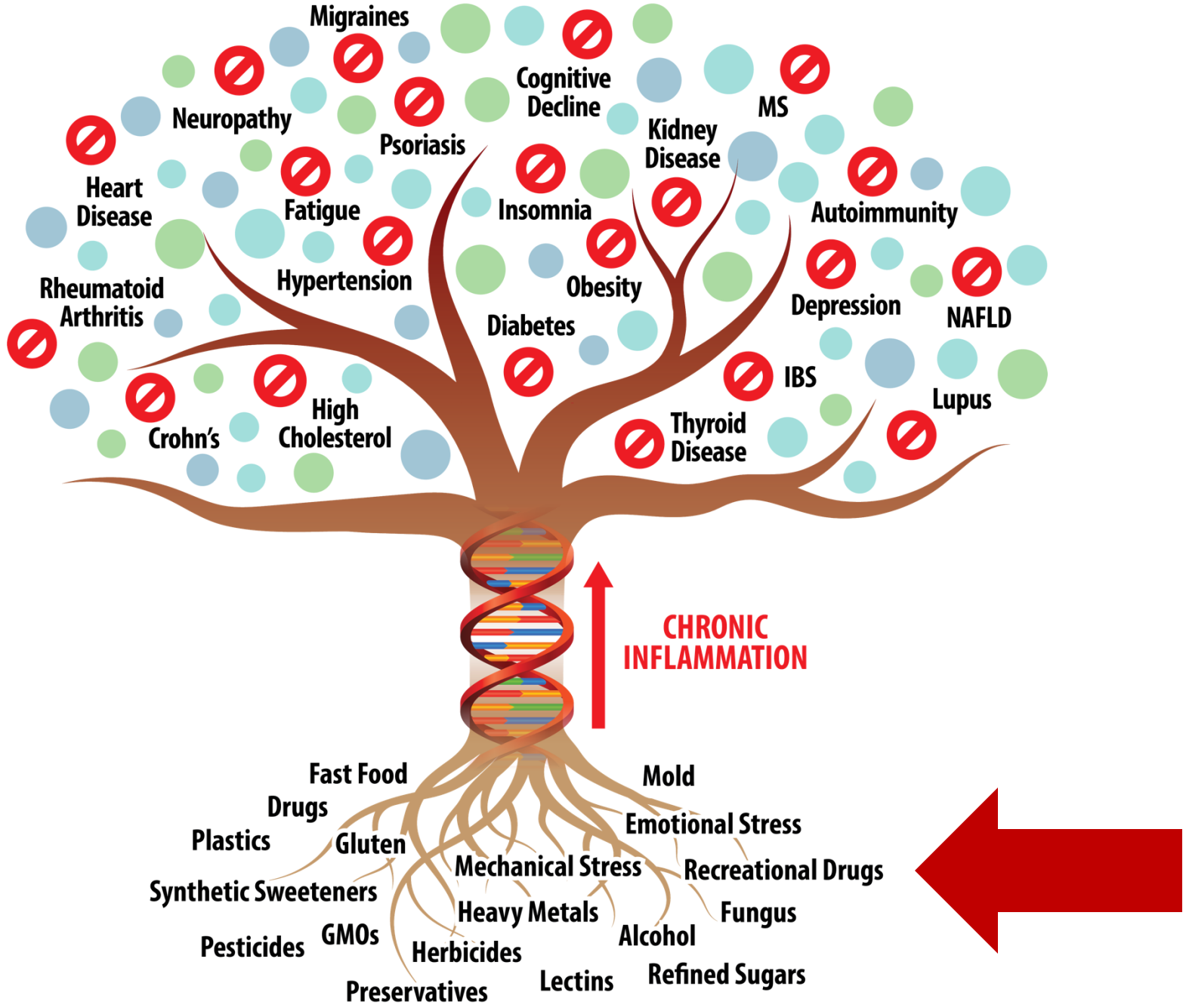
Migraines
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Lupus
Crohn's
High Cholesterol
Thyroid Disease
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Gluten
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Pesticides
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Recreational Drugs
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