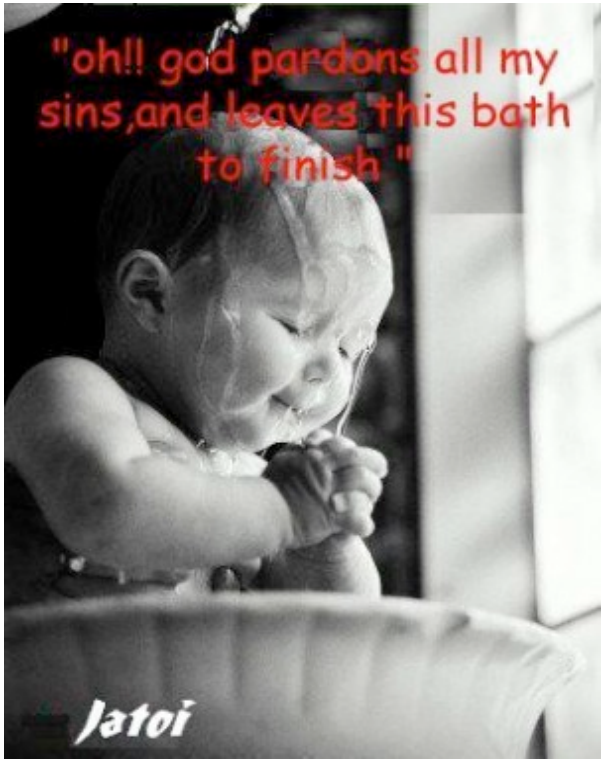
NEUROLOGY REVIEW

For those who still suffering from Neuro …



Here is my gift … Enjoy …

Condition	Pathogenesis	Sx / Dx	Rx	Notes
Sleep Disorders (dyssomnias)				
Intrinsic	obstructive sleep apnea, restless legs, periodic limb movement disorder, narcolepsy, idiopathic hypersomnia, psychophysiologic insomnia			
Extrinsic	inadequate sleep hygiene, environment, insufficient sleep, hypnotic sleep disorder			
Circadian rhythm disorders	shift work, delayed sleep phase syndrome, advances sleep phase syndrome			
Insomnia	drugs (caffeine, antidepressants, MAO-I, bronchodilators, stimulants, steroids), stress, medical causes	difficulty falling asleep or staying asleep	hypnotics, sleep instructions, sleep restriction	
Obstructive sleep apnea syndrome	narrow airway (blockage by tongue, pharynx, uvula)	loud ***snoring*** ; frequent arousal at night; headache, depression, irritability, memory probs	***CPAP*** (continuous positive air pressure); surgery; weight loss	risk Fx: obesity, EtOH, large tonsils or palate, retrognathia, micrognathia; assoc. w/ HTN, MI, stroke
Narcolepsy	genetic (***HLA-DR15***); linked to ***orexin deficiency***	***cataplexy*** (sudden loss of postural tone while awake, triggered by emotion/laughter); sleep paralysis; hypnagogic hallucinations; excess sleepiness; Dx: multiple sleep latency test	stimulants (Ritalin, dextroamphetamine), tricyclic ADs for cataplexy	atonia like REM sleep -> intrusion of REM sleep into wakefulness
Restless legs syndrome	assoc. w/ peripheral neuropathy, myalopathy, pregnancy, Fe-deficiency	urge to move legs while sleeping	dopamine agonists; pain meds, benzodiazepines	
Parasomnias				
NREM arousal disorders	mosr common in 1st 1/3 of night (delta NREM) in children w/ family Hx	different every time	avoid precipitants, prevent injury	
Somnambulism	during stage 3-4 of NREM	sleepwalking		
Sleep Terror	unexplained fright upon awakening	vague memory of impending doom		
REM sleep behavior disorder	not paralyzed during REM -> act out dreams; lack of atonia, disinhibition of brainstem centers	abnl REM (Dx: incr. EMG); violent or injurous behavior during REM		assoc. w/ Parkinson's, dementia, narcolepsy, meds, EtOH withdrawal
Nightmare	vivid memory of scary dreams (during REM)	full alertness upon awakening		
Epilepsy				
Idiopathic Partial				
Benign Rolandic epilepsy	onset age 2-13; AD inheritance w/ incomplete penetrance	***absence*** seizures; nocturnal clonic facial twitching, drooling; begins/ends abruptly; no post-ictal confusion; can be induced by ***hyperventilation***	usu. remits by 18	benign
Symptomatic/ cryptogenic Partial				
Frontal lobe epilepsy		brief (seconds); often nocturnal or upon awakening; agitated hypermotor behavior; no post-ictal state		often misdiagnosed as psychogenic seizure
Temporal lobe epilepsy		aura of epigastric rising (nausea), psychic phenomena; blank wide-eyed stare & dilated pupils; lip-smacking		
Parietal lobe epilepsy		aura of somatosensory Sx, vertigo		
Occipital lobe epilepsy		visual hallucinations; post-ictal blindness if secondary to TLE or FLE		
Idiopathic Generalized				
Childhood Absence epilepsy	onset age 2-10	brief; blank stare; abrupt onset & end; frequent; induced by hyperventilation	usu. remits by 18	benign
Juveline Absence epilepsy	onset after puberty	tonic-clonic seizures; infrequent	less remission	
Juvenile Myoclonic epilepsy	onset in adolescense, early adults	morning myoclonic seizures; no impairment of consciousness; exacerbated by sleep deprivation	does not remit; Tx = valproate	
Symptomatic/ cryptogenic Generalized				
Lennox-Gastaut syndrome		many types of seizures; often in developmentally disabled; diffuse cognitive dysfxn		

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Movement Disorders				
Parkinson's disease	***hypokinetic*** clinical syndrome due to degeneration of ***dopaminergic*** neurons from ***substantia nigra pars compacta*** to putamen; may be accelerated ***aging or environmental*** toxin exposure (ex. MPTP -> MPT+ -> mitochondrial damage; ex. rotenone); onset age 40-70	resting ***tremor*** , ***rigidity*** , ***bradykinesia*** , flexed posture; early: shuffling gait, micrographia, unilateral, masked facies; late: balance probs, orthostasis, dementia; Dx: response to dopa, Lewy bodies on histo	***L-dopa*** (1/3 improve, 1/3 same, 1/3 lose response)	Diff Dx: essential tremor (only Sx), drug-induced (neuroleptics, anti-HTN, anti-emetics), other neurodegenerative dz (distinguish by dopa-response); compensation for striatal neuronal loss = decr. DA clearance; age-related loss of VMAT2
Huntington's disease	***hyperkinetic*** , autosomal dominant; CAG triplet repeat expansion on chrom. 4 (anticipation); gain of function mutation -> deposits in striatum projection neurons (regional selectivity) -> striatal atrophy; onset age 30-40	early: personality change, ***chorea*** ; late: dementia, dysarthria, abnl eye mvmts, athetosis, dystonia, rigidity; Dx: 1) family Hx, 2) movement disorder, 3) evidence of progression, 4) exclusion of treatable dz		DNA test -> carrier (not Dx of disease); strong excitotoxic hypothesis (NMDA -> Glu); weak excitotoxic hypothesis
Tourette's syndrome	childhood onset, often assoc. w/ ADHD or obsessive/compulsive disorder	multiple motor or phonic ***tics*** (most common in face/eye)	dopamine antagonists	tics may be predictable, stereotypic; behavior problems are disabling, not tics
Hemiballismus	destruction of ***subthalamic nucleus*** -> same common pathway as HD	one-sided involuntary jerking of proximal limb		
Dystonias	destruction of ***putamen***	fixed posture of limbs	anti-cholinergics	primary types = full body (childhood onset), focal-segmental type (adult onset)
Wilson's disease	autosomal recessive copper transport disease	dystonic hands/face, tremor, dysarthria, rigidity; ***Kayser-Fleischer rings*** on cornea; Dx: urine Cu		
Dopa-responsive dystonia	rare, child onset, tyrosine hydroxylase mutation; resembles dystonic cerebral palsy w/ ***diurnal variation***	dystonia	L-dopa (very responsive entire life)	
Essential tremor	late onset; no CNS degeneration or damage; pyramidal/cerebellar origin (excess activity)	postural/kinetic tremor = amplified by extended posture, movement, stress/anxiety, voice is affected	β-blockers (inderal), primidone	
Tardive disorders	usu. older pts w/ ***chronic use of dopamine antagonists*** (schizophrenics)	involuntary dyskinesia of oral/buccal mucosa (lip-smacking)	limit doses of neuroleptics	
Stroke			prevention: modify risk Fx, anti-platelets, anti-coags; carotid endarterectomy if severe stenosis 70-99%; (***no surgery if stenosis < 50%***); acute Tx: ***t-PA if onset w/i 3 hrs & no hemorrhage on CT***	
Internal Carotid	transient monocular blindness (ophthalmic a. embolus)			
Middle Cerebral	contralateral hemiparesis (face/arm > leg) & sensory loss; ipsilateral gaze; contralateral visual field defect (if posterior); dominant -> aphasia, alexia, agraphia; non-dominant -> neglect, visuospatial difficulty, aprosody			lateral surface
Anterior Cerebral	contralateral hemiparesis (leg > face/arm) & sensory loss; abulia/akinesia = no affect (Acomm); urinary incontinence			medial surface
Posterior Cerebral	contralateral visual field defect; visual hallucinations; cortical blindness if bilateral (pupils respond to light; denies loss of vision)			posterior brain
Vertebrobasilar	ipsilateral CN defects; contralateral hemiparesis & sensory loss; ipsilateral cerebellar Sx; vertigo; altered consciousness; ex) Wallenburg (PICA)			brainstem

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Ruptured Aneurysm				
Saccular (berry)	***congenital defect*** in vessel wall -> weakness forms bleb; usu. at circle of Willis; rupture = Acomm 30%, Pcomm (ant. choroidal) 25%, MCA 20%, basilar (SCA) 10%, vertebral (PICA) 5%	mass effect -> compress brain or CN III; rupture -> ***subarachnoid hemorrhage*** -> "worst headache of my life"		
Fusiform	***atherosclerotic*** disease			
Mycotic	caused by ***infection*** (IVDA or endocarditis); usu. in periphery at cortical surface (not at CoW)			
Vascular Malformations				
Arteriovenous (AVM)	tangle of vessels (nidus) w/ fistulous connection to vein -> high venous pressure; peak age 10-19	hemorrhage 50%, seizure 25%, headache 10-20%, neuro deficit; Dx: CT, angiography (***early draining vein***)	surgery if superficial; radiosurgery (focus on nidus) if deep in brainstem or basal ganglia	
Osler-Weber-Rendu syndrome	AD; family Hx of epistaxis or multiple AVMs	bleeding of nasal mucosa & lung parenchyma		
Cavernous (cavernoma)	large vascular channel; low pressure; less bleeding risk; 30% assoc. w/ venous malformation	less severe bleed; supratentorial cavernoma -> temporal lobe seizure; brainstem cavernoma more symptomatic (neuro deficit) than AVM	***surgery*** : remove symptomatic cavernoma from brainstem	
Venous	caput medusae	no bleeding risk	cannot remove	
Capillary Telangiectasia		no bleeding risk		
Ischemia & Infarct		brain swollen, gyri flattened; can herniate		
Global Cerebral Ischemia	usu. hypoxic or ischemic encephalopathy	pink neurons; pyknotic glia; neuropil edema; respirator brain		selective vulnerability = neurons > glia > neuropil; 3rd layer of cortex, C1 of hippocampus, cerebellar Purkinje cells
Focal Cerebral Ischemia	usu. followed by infarct; caused by thrombosis, embolus, vasculitis, atherosclerosis			
Ischemic infarct	caused by focal ischemia due to thrombosis, etc.	pink neurons; pyknotic glia; neuropil edema; PMNs, lymphs/macs, vessel proliferation, astrocytic gliosis		
Hemorrhagic infarct	dead tissue + blood in parenchyma	pink neurons; pyknotic glia; neuropil edema; PMNs, lymphs/macs, vessel proliferation, astrocytic gliosis (scar forever), cavitation		
Incomplete infarct	selective necrosis of neurons w/ preserved glia			
Hemorrhage				
Intracranial Hemorrhage				
Intraparenchymal hemorrhage	due to ***hypertension*** , hemorhagic diathesis (thin blood), neoplasm, amyloid angiopathy (Alzheimer's)			
Subarachnoid hemorrhage (SAH)	due to ***rupture of berry aneurysm*** (congenital, saccular), acquired aneurysm (atherosclerosis, fusiform); usu. at bifurcations; peak age 40-49	***sentinel headache*** ("worst headache of my life"), brief syncope, nausea/vomiting, photophobia, meningismus; Dx: CT (95% sensitive; 5-point star), lumbar puncture (if negative CT; blood or xanthochromium in CSF), ***cerebral angiography***	curative = surgical clipping (low recurrence) & endovascular coiling (less invasive)	**rebleed** = highest risk w/i 24 hrs, 50% w/i 6 mos.; **incidental bleed** = 1% /yr; **vasospasm** = peak 4-14 days post-SAH, risk Fx = amount of blood in SA cystern
Traumatic injury				
Epidural hemotoma (EDH)	skull fracture & ***rupture of middle meningeal a.*** -> blood separates dura from periosteum (not a real space) -> compresses brain			
Subdural hematoma (SDH)	***rupture of bridging veins*** -> blood separates dura from pia mater; venous hemorrhage -> develops slowly			in older people, brain has shrunk -> mild trauma can cause SDH
Vascular malformation	see above			
Hypertensive cerebrovascular disease				
Charcot-Bouchard microaneurysms	small vessel out-pouchings, thin-walled from high BP; may rupture			
Lacunes	tiny infarcts of penetrating arterioles; often in ***basal ganglia*** , internal capsule, thalamus, pons, cerebellum			
Etat crible	wide perivascular space filled w/ macrophages			
Hypertensive encephalopathy	many TIAs cause multi-infarct dementia			
Binswanger disease	disease of small vessels of white matter (leukencephalopathy)			
Hyalinized arteriolar sclerosis	thick acellular vessel wall	starch bodies		

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Headache				
Migraine		unilateral > bilateral; nausea, photophobia, lightheadedness, aura, throbbing/pounding	abortive (relief) or prophylactic (prevention) drugs	
Tension		bilateral, often frontal; variable duration; aching/tightening; assoc. muscle contraction		
Cluster		short duration (30 min); intense unilateral pain; lacrimation; cyclical (often daily); unilateral Horner's syndrome	O2 mask; avoid EtOH, smoking	pts. can't sit still
TMJ disease		bilateral aching; TMJ dislocation		
Temporal arteritis	systemic vasculitis in older people	headache, jaw claudication, visual probs; polymyalgia rheumatica = malaise, joint pain, fever, anorexia; Dx: ***incr. ESR*** , biopsy (giant cell in lumen)	steroids (for years)	complications = blindess, stroke
Pseudotumor cerebri	aka benign intracranial hypertension; often in young obese/pregnant women	elev. CSF pressure; chronic headaches; papilledema; LP for Dx & Tx	steroids, acetazolamide	
Trigeminal neuralgia	triggered by chewing, cold	sharp unilateral lancinating pain; daily		pts. put hand to cheek
Hydrocephalus				
Communicating	extraventricular blockage; impaired CSF absorption	equal dilation of all ventricles & subarachnoid space; ICP may be mildly elevated; dye injected into lateral ventricle recovered in lumbar space		causes = infection, hemorrhage (SAH, SDH), incr. venous pressure (HF, AVM), trauma, idiopathic, extraaxial tumor
Non-communicating	obstructive ventricular blockage	unequal dilation of ventricles; injected dye can't be recovered in lumbar CSF space		causes = congenital aqueduct stenosis, tumors of aqueduct, posterior fossa malformation, Paget's disease
Neuromuscular disease	often paraneoplastic	affects skeletal muscle only		
Myasthenia gravis	autoimmune ***antibodies*** vs. postsynaptic ***Ach receptor*** ; esp. affects CNs	ptosis, difficult eye mvmts & holding head up, transverse smile; easy fatiguability; severity varies over hours…yrs; histo: flat NMJ folds; Dx: edrophonium; low MEPP, low EPP, normal [Ach]	pyridostigmine; thymectomy; therapeutic plasma exchange (TPE); immunosuppression	flattened folds in NMJ indicate loss of Ach receptors and AchE; assoc. w/ other autoimmune disorders & thymus (thymic hyperplasia, ***thymoma***)
Lambert-Eaton Myasthenic Syndrome (LEMS)	autoimmune ***antibodies*** vs. presynaptic voltage-gated ***Ca-channels***	weakness of proximal muscles (pelvic girdle); impotence, dry mouth, parasthesia; normal MEPP, low EPP, low [Ach]	remove tumor; TPE; immunosuppression	assoc. w/ ***small cell carcinoma*** of lung; decr. Ach release (improved by rapid repetitive stimulation -> more Ca in end-plate)
Myopathies		symmetric, proximal ***muscle weakness*** ; usu. painless; normal muscle bulk, cognition, sensation & reflexes		
Congenital	named after biopsy findings; usu. found in adults	peculiar build or muscle weakness; non-progressive	non-treatable	
Dystrophy	usu. found in kids	***inherited & progressive weakness***		
Duchenne muscular dystrophy	X-linked; ***absence of dystrophin*** ; in young boys	severe proximal muscle weakness; pseudohypertrophy of calf musc.		
Becker muscular dystrophy	X-linked; ***low levels of dystrophin*** ; in older boys			
Myotonic dystrophy	AD; trinucleotide repeats -> anticipation; systemic disease; in adults	myotonia = ***stiffness*** ; progressive weakness; atrophy of temporalis m. & frontal balding; long-thin face; EMG = repetitive firing		assoc. w/ abnormalities of endocrine, eyes, heart, CNS, testicular atrophy
Inflammatory myopathy			most treatable	
Polymyositis	autoimmune	lymphocytes invade muscle -> breakdown	steroids	proximal > distal
Dermatomyositis	autoimmune; CT disease	vascular involvement; rash on knuckes & eyelids	steroids	assoc. w/ malignancy; proximal > distal
Inclusion body myositis	probably autoimmune	***weakness in quadriceps, wrist & finger flexors*** , but extensors still strong	no steroid response	distal predominance of hands
Metabolic myopathy				
Mitochondrial myopathy	***maternal inheritance*** ; abnl use of glycogen, lipid, oxygen	***pain*** on exertion (myalgia); biopsy = ***ragged-red fibers*** (clumping mitochondria), fat build-up in muscle		"energy crisis" under excess stress; assoc. syndromes = Kearns-Sayre, MELAS
Myopathy of systemic disease	adrenal (excess steroids), thyroid, renal failure, alcohol (binge -> rhabdomyolysis), steroids (common iatrogenic), statins, AZT (ragged-red fiber), colchicine			
Chronic steroid		normal EMG & CPK		
Acute steroid	steroid + NMJ blocker = loss of myosin (acute quadriplegic myopathy)			risk Fx = nutritional defic., sepsis, polyneuropathy, cumulative steroids
Infectious	trichinella or HIV			
Rhabdomyolysis	severe muscle injury	myoglobinuria		

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Peripheral Neuropathies				
Axonal Neuropathies				EtOH -> paresthesia (burning, tingling of feet) = progressive painful sensory neuropathy
Hereditary motor sensory neuropathy type II (HMSNII)	inherited; slow progression; lower extremities affected before upper	***pes cavus*** (foot arching), hammer toes, ankle weakness (chronic progressive), loss of reflexes		
Diabetic neuropathy	gradual progression; risk Fx = duration, poor glycemic control, associated retinopathy & nephropathy	symmetric numbness & decr. sensation in lower extremities		does NOT depend on gender or type of diabetes; most common neuropathy in U.S.
Vit B12 deficiency	subacute combined degeneration of dorsal columns, corticospinal tracts	***combined UMN & LMN signs*** -> ankle areflexia w/ upper extremity hyperreflexia		
Demyelinating Neuropathies	leads to conduction block; may be segmental, diffuse, or secondary			
Acquired inflammatory demyelinating neuropathy (AIDP) - Guillan-Barre syndrome	acute onset	Hx of recent flu-like illness (antecedent infection), rapidly progressing weakness (legs to arms), areflexia, CN involvement (esp. VII; III, IV, VI), abnl CSF findings (high protein, no cells); mild sensory Sx		
Chronic inflammatory demyelinating neuropathy (CIDP)	gradual onset (> 4 wks)	symmetric involvement of large nerves (motor & sensory) -> distal & proximal weakness; areflexia		
Hereditary motor sensory neuropathy type I (HMSNI)	rapid progression	***pes cavus*** , thin legs		aka Charcot-Marie-Tooth disease
Motor Neuropathies	weakness usu. distal > proximal			
Polio	degeneration of ***LMNs*** (nerves & anterior horn cells)	weakness (leg>arm), flaccidity, ***decr. reflexes*** in one or more limbs, maybe fasciculations; no incontinence		post-polio syndrome = worse mobility later in life
Amyotrophic lateral sclerosis (ALS) - Lou Gehrig's disease	degeneration of ***UMNs & LMNs*** (anterior horn cells & corticospinal tracts)	***hyperreflexia*** , symmetric ***diffuse weakness*** , normal sensation, no incontinence		only motor fibers affected
Toxic/Metabolic diseases		**bilateral symmetry & selective vulnerability**		
Global hypoxia	gray matter ***neurons*** vulnerable, esp. large pyramidal cells in ***hippocampus***	cavitation & gliosis if old		
Carbon monoxide poisoning	***neurons*** vulnerable, esp. ***globus pallidus***	carboxyhemoglobin -> pink brain		
Wernicke's encephalopathy	***thiamine*** (B1) ***deficiency*** (esp. alcoholics); ***supporting cells*** vulnerable (capillaries, glia, myelin), esp. in ***mamillary bodies & aqueduct***	neurons spared; alcoholic cerebellar degeneration -> anterior vermis atrophies		
Hepatic encephalopathy	astrocytes vulnerable, esp. in deep gray matter	swollen astrocytes (Alzheimer type II glia)		
Toxic/Metabolic & Demyelinating diseases		**bilateral symmetry + selective vulnerability + axonal sparing + abnormal deposits**		
Central pontine myelinolysis	caused by rapid overcorrection of hyponatremia -> ***vacuolar demyelination***	axons spared		
Subacute combined degeneration	***vitamin B12 deficiency*** (pernicious anemia)	affects motor tracts (corticospinal) and sensory tracts (dorsal columns); blue balls of myelin		
Krabbe's disease	inherited deficiency of β-galactosidase	accumulation of galactocerebroside; lipids accum. in macrophages		aka globoid cell leukodystrophy
Metachromatic leukodystrophy	inherited deficiency of arylsulfatase	accumulation of sulfatides; affects white matter tracts		
Adrenoleukodystrophy	X-linked	accumulation of LCFAs; affects occipital lobes		beta INF doesn't help

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Demyelinating diseases	myelin or oligodendrocyte is target	**axonal sparing & abnormal deposits**		
Allergic encephalomyelitis	acute disseminated, perivascular distribution; triggered by rabbit rabies vaccine, smallpox vaccine, measles virus	linear lesions along veins; rapidly progressive -> often die w/i 1 year		often in AIDS pts
Progressive multifocal leukoencephalopathy	***JC papovavirus*** infects ***oligodendroglial cells***	multifocal lesions of white matter; glial cells filled w/ virions; macrophages accumulate fat; Sx: subacute dementia, ataxia, unilateral > bilateral; inclusion bodies		almost always fatal; often in AIDS pts
Multiple sclerosis	***at least 2 lesions in CNS*** separated by space & time; polygenic inheritence; autoimmune vs. CNS myelin; damage by TNFα; decr. T-suppressor fxn & incr. T-helper fxn; impaired transmission in CNS; spinal cord lesions cause more Sx than brain lesions	***patchy, irregular*** (not bilateral symmetric) sclerotic plaques of periventricular areas (corpus callosum); oligodendrocyte degeneration (naked axons), astrocyte proliferation, perivenular inflammation; incr. intrathecal Ig (in CSF); Sx: ***intranuclear ophthalmoplegia, optic neuritis, transverse myelitis*** ; Dx: Hx of ***2 diff. CNS events*** (supported by exam) or Hx of ***1 CNS event w/ positive lumbar puncture***	prophylaxis: ***beta interferon*** = Avonex, Betaseron, Copaxone -> reduce relapse & number of lesions; acute flare: IV steroid (solumedrol)	most common cause of nontraumatic disability in young adults (18-60); do NOT treat w/ gamma INF -> worsens Sx; symptomatic therapy to control spasticity, fatigue, urinary urgency; EAE animal model; course = relapsing/remitting, rapidly progressive, benign; 50% need cane 15 yrs post-Dx; Dx by MRI (T2 plaques), evoked potentials (visual most commonly abnl), lumbar puncture (***oligoclonal antibody bands*** -> not Devic's syndrome)
Infectious diseases				
Herpes encephalitis	temporal lobe destruction	massive hemorrhagic necrosis & inflammation		
Subacute sclerosing panencephalitis	post-measles	inclusions in gray & white matter		
Spongiform encephalopathy	Creutzfeld-Jacob disease (due to prions)			Kuru also caused by prions
HIV encephalitis		coalesced macrophages		
Bacterial meningitis	due to E. coli, H. influenzae, N. meningitidis, S. pneumoniae	pus in subarachnoid space		
Abscess	due to bacteria, fungi, protozoa	collagen walls off abscess		
Granuloma	fungi & TB affect base of brain	nodules of giant cells		mucor causes hemorrhage
Toxoplasma		abscess or pseudocyst filled w/ toxoplasma		
Pediatric Neurology				
Development delay	can be global or localized	doesn't reach milestones at normal time		static = slow acquisition of milestones; progressive = loss of milestones
Static global encephalopathy (SGE)	due to 1) ***brain malformation*** (genetic = Down's, Fragile X, William's; toxic = fetal alcohol syndrome, maternal PKU, hypothyroidism, radiation exposure; unknown = schizencephaly), or 2) ***injury*** to normal brain (metabolic = hypoglycemia; infectious = congenital (toxo, rubella, CMV) or post-natal (E. coli, strep B); hypoxic = perinatal asphyxia)			
Cerebral Palsy	***static motor encephalopathy*** ; same etiologies as SGE	***hypotonia*** in early infancy; later, ***abnl motor control*** (weakness, spastic tone, hemiplegia/quadriplegia); not progressive or global		static = damage has already been done
Hypotonia	**PNS** = anterior horn cells (Werdnig Hoffman; face not affected), NM jxn (infant botulism; transient myasthenia gravis), muscle (congenital myopathy; myotonic dystrophy; face affected); **CNS** = same etiologies as SGE	floppy baby -> no resistance to passive motion; **PNS** = weakness, areflexia, fasciculations, thin ribs, high diaphragm, contractures; **CNS** = seizures, lethargy, no weakness		
Acute ataxia				
Post-infectious cerebellar ataxia	acute onset follows viral illness (chicken pox); self-limited	truncal ataxia w/ or w/o extremity tremor or nystagmus		rule out EtOH/dilantin intox, posterior fossa tumor, Guillan-Barre syndrome
Opsoclonus/ Myoclonus syndrome	acute; can be post-infectious, but 50% assoc. w/ small occult ***neuroblastoma***	opsoclonus = rapid chaotic eye mvmts (persists in sleep); myoclonus = shock-like muscle contractions; Sx = cerebellar ataxia, cortical encephalopathy (irritability +/- dementia)		"dancing eyes, dancing feet"

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Brain Tumors	neural tube (gliomas, medulloblastomas) infiltrate & kill; neural crest (schwannomas, meningiomas) externally compress; metastases internally or externally compress			MIB-1 (antibody for Ki-67) stains proliferating nuclei
Gliomas	occur anywhere in CNS; primary tumors usu. infiltrate; progress to high grade over time; Sx = ***incr. ICP, seizures, focal deficits*** ; usu. ***fatal*** , recur despite therapy, disseminate throughout CSF		surgery prolongs life, not a cure; XRT adjunct; chemo, immunotherapy	incidence rising; etiology = trauma, radiation, EMF exposure, carcinogen, p53 mutations, EGFR amplification, LOH ch. 10
Astrocytoma	grade II; diffuse low-grade astrocytoma	prognosis by MIB-1; GFAP (+)		GFAP = glial fibrillary acidic protein
Anaplastic astrocytoma	grade III	more mitoses & pleomorphism; GFAP (+)		
Pilocytic astrocytoma	grade I; juvenile astrocytoma	looks like ***hair cell*** ; Rosenthal fibers	surgery	usu. discrete margin
Glioblastoma multiforme	grade IV; extra ch. 7 and deletion of ch. 10	butterfly lesion crosses corpus callosum; either endothelial proliferation or necrosis (palisades)		survival < 1 year
Ependymoma	grade II-III	***luminal rosettes*** (cilia project into lumen); ***perivascular rosettes*** (fibrillar zones around vessels)		
Oligodendroglioma	grade II-III	***perinuclear haloes*** ; lobules; monotonous, nested		
Ganglion cell tumor	neoplastic neurons			
Undifferentiated tumors		indistinguishable by histology alone (need location)		
Medulloblastoma	grade IV	arises in ***cerebellum*** , posterior fossa; blue tumor = nuclear crowding, high N:C ratio; ***Homer Wright rosettes*** (fibrillar, no lumen)		
Primitive neuroectodermal tumor (PNET)	grade IV	non-cerebellar origin		
Primary CNS lymphoma (PCNSL)	grade IV; diffuse type NHL (B-cell); usu. in ***immunosuppressed pts*** (AIDS, transplant, collagen vascular dz); assoc. w/ ***Epstein-Barr virus***	***uveocyclitis*** ; blue tumor; CT: contiguous w/ ventricular or meningeal surface of brain; often occurs in corpus callosum, basal ganglia, posterior fossa	XRT & chemo extend life, not curative	spreads rapidly; monoclonal staining of B cells
Meningioma	generally benign; arise from arachnoidal cap cells; more common in women; etiology = trauma, radiation, deletion or LOH on ch. 22, SV40 papovavirus	attached to dura; Sx = incr. ICP, seizures, focal deficits, ***hyperostosis*** (bone thickening -> conehead), ***endocrine responsiveness*** (progesterone receptors -> enlarges during pregnancy); tumor compresses but does not infiltrate; ***syncytial*** ; ***whorls*** (like granulomas); ***psammoma bodies*** (laminated calcifications)	surgical resection; XRT, RU486, hydroxyurea, IFNα	NF2 = neurofibromatosis 2
Nerve sheath tumors				
Acoustic neuroma (schwannoma)	grade I; generally benign; unilateral = sporadic, bilateral = ***NF2*** (both ***ch. 22*** mut)	variable presentation; Dx: MRI; ***compresses CN VIII*** , but ***does not invade*** ; maintained basement membranes; ***Verocay bodies*** (alternating nuclei/fibrils); Antoni A & B patterns	surgery curative (often lose hearing, facial n. palsy)	tumor of vestibular schwann cells of CN VIII in posterior fossa;
Neurofibroma	***NF1*** (ch. 17)	axons through tumor -> infiltrates peripheral nerve		
Metastatic tumors	grade IV; also melanoma, leukemia	often ***multiple lesions*** , at ***gray-white jxn*** (high local blood flow); usu. parenchymal; spinal bony or epidural = pain & cord compression; subarachnoid = headach, spine pain, hydrocephalus, CN palsies; Dx: MRI	no surgical cure (only symptomatic relief); XRT	**parenchymal** lesions = lung, breast, kidney, thyroid; **bony** lesions = prostate, breast, lung, lymphoma, myeloma
Carcinoma	grade IV	epithelial appearance; distinct margin		
Colloid cyst	grade I	location = ***3rd ventricle***		
Pituitary adenoma	grade I; generally benign; usu. adults	Sx = mass effect, endocrinopathy (prolactin, TSH, GH, ACTH, Cushing's, acromegaly); MRI: sella enlargement; immunoperoxidase stains pituitary peptide hormones		etiology = hypothalamic stimulation of pituitary, G-protein mut., multiple endocrine neoplasia

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Visual Field Defects				
Optic nerve defects				
Central scotoma	defect of papillomacular bundle; due to sungazing (burned fovea), optic neuritis, degeneration, toxins, pernicious anemia, tumor compression	dark spot in center of vision		
Cecocentral scotoma	defect of papillomacular bundle	central scotoma connected to physiologic blind spot (elongated oval shape)		
Arcuate scotoma	defect of arcuate bundle; due to optic nerve infarction, glaucoma	defect on opposite side from retinal lesion		
Temporal wedge scotoma	defect of nasoradial bundle; due to congenital anomalies, inflammation	respect horizontal meridian		
Chiasmal defects	usu. damage to temporal visual field	border vertical meridian but never cross nasal field		
Bitemporal hemianopia	due to ***pituitary tumor*** , craniopharyngioma, astrocytoma, meningioma, carotid aneurysm			
Retrochiasmal defects	damage to optic tract, LGN, radiations, or visual cortex	affects contralateral visual field (ipsi temporal retina + contra nasal retina)		respects vertical meridian
Complete homonymous hemianopia	total lesion	loss of entire half of visual field		
Incongruous hemianopia	subtotal lesion in optic tract	lesions not identical in both eyes		
Congruous hemianopia	subtotal lesion in visual cortex	lesions exactly same in both eyes		
Integrative defects	temporal = fine details, image recognition	parietal = peripheral movement		
Eye Deviations				
Strabismus	***ocular misalignment***	diplopia (foveas not focused on same object)		
Tropia	***constant deviation*** of visual directions			***monocular*** (one non-fixating eye)
Adult tropia	due to CN palsies, Graves, myasthenia gravis, stroke, tumor, trauma	not capable of suppressing eye		
Childood tropia	infantile esotropia, accomodative esotropia, childhood exotropia, visual deprivation, also adult causes	capable of suppressing eye (not fully developed); ***may lead to amblyopia*** , decr. depth perception	refer to ophthalmologist; treat early to prevent amblyopia (tropias don't disappear w/ time)	may indicate ***underlying retinoblastoma*** -> AD, malignant, mets to liver & brain, detected by leukocoria (white pupillary reflex)
Phoria	***transient deviation*** of alignment -> eyes held in alignment by fusion	Sx = headache, eye strain; cover-uncover -> eye drifts out of alignment		***binocular*** ; don't cause amblyopia; no hypophorias
Amblyopia	due to tropia, visual deprivation (cataract, anisometropia, corneal opacity, ptosis)	reduced vision b/c of visual cortex ***suppression of retinal image*** , formed in childhood	patch normal eye to force use of non-fixating eye	
Acute Persistent Visual Loss (emergencies)				
Keratitis	inflammation of cornea; often due to HSV	painful loss of vision; red eye; subepithelial scar	corneal graft	foreign body sensation
Acute angle-closure glaucoma	blocked exit of aqueous humor by canal of Schlemm	sudden severe painful loss of vision; red eye; blurry vision; incr. intraocular pressure	laser hole in iris to reduce IOP	
Endophthalmitis	infection; due to penetration, sepsis, iatrogenic	painful loss of vision; red eye; decr. red reflex; pus pocket in eye	drain	
Retinal detachment	vitreous changes w/ age, pulls on retina	***floaters, flashes*** of light, blurry vision; painless	reattachment surgery	usu. in periphery, no change in visual acuity at first
Retinal artery occlusion	thrombosis or embolus of retinal artery	painless sudden loss of vision; ***cherry-red spot*** ; afferent pupil defect; retina looks pale/milky (thickened)	lower IOP	
Ischemic optic neuropathy	***arteriosclerotic occlusion*** or ***temporal arteritis*** (usu. over age 60)	painless; swollen disc	high dose corticosteroids	
Refractive Conditions				
Emmetropia	perfect eyes			
Myopia (nearsighted)	***eyeball too long*** ; lens system too powerful	normal reading, poor distance vision	concave (diverging) corrective lens (-)	
Hyperopia (farsighted)	***eyeball too short*** ; lens system too weak	normal distance, poor reading; accomodation helps vision (may not have Sx until later in life)	convex (converging) corrective lens (+)	
Astigmatism	***abnl curvature of cornea***		cylindrically curved corrective lens	contacts don't work well
Presbyopia	normal ***loss of accomodation w/ aging*** ; lens stiffens & less elastic	difficulty reading	bifocals	hyperopic people become presbyopic at younger age

Condition	Pathogenesis	Sx / Dx	Rx	Notes
Other Eye Disorders				
Cataracts	any ***opacity in lens*** ; causes = age-related, congenital, trauma, drug-induced, metabolic, inflammation, radiation (NOT glaucoma)	***clouding*** of retinal image; appear as light parts of pupil; Dx by Hx of painless progressive visual loss & ophthy exam	ultrasound phakoemulsification	everyone eventually gets cataracts; may affect any layer of lens (capsule, cortex, nucleus); asymmetric
Primary open angle glaucoma	trabecular meshwork outlet pores too small -> ***cupping*** of optic nerve w/ incr. IOP; usu. affects blacks, people over 40	cup diameter > 1/2 diameter of entire disc; arcuate defects; most don't have visual Sx until late in disease; ***tunnel vision***	lower IOP (meds, drops, surgery)	earliest change is vertical elongation of cup; may lead to blindness
Red Eye Emergencies	inflamed conjunctival vessels			
Orbital cellulitis	spread of sinus infection (from ethmoid)	swollen eyelid, redness, tenderness, ptosis	IV ABs	
Orbital tumor	usu. malignant (in kids)	***proptosis***		
Keratitis	inflammation of cornea; due to HSV, etc.	***ciliary flush*** (red halo); photophobia, foreign body sensation; corneal epithelium denudation; corneal ulcer		Dx w/ fluorescein strips; may have permanent vision loss w/ scarred subepithelial invasion
Uveitis	inflammation of anterior uvea (iris, ciliary body); usu. auto-immune	photophobia, usu. good visual acuity; pupil looks oval (swollen iris)		
Acute angle-closure glaucoma	iris plugs trabecular meshwork	sudden incr. in IOP, severe pain, headache, nausea, corneal haze, blurry vision		hyperopes tend to have narrower angle
Endophthalmitis	infection inside eye			
Bacterial conjunctivitis		***purulent discharge*** ;		
Systemic Diseases				
AIDS	opportunistic infections = CMV retinitis, herpes zoster ophthalmacus, Kaposi sarcoma, toxoplasma,	***cotton wool spots; CMV retinitis***		cotton wool spots = ischemia of small vessels in retinal nerve fiber layer (white opacities in retina)
Syphilis	treponema pallidum	"-itises" of the eye; tabes dorsalis; Argyll-Robertson pupil		Argyll-Robertson pupil = normal accomodation, abnormal light reflex
Diabetes	hyperglycemia	loss of pericytes, ***microaneurysms*** , ***macular edema*** , ***cotton wool spots*** , neovascularization, glaucoma, lens thickening, cataracts, CN palsies, retinal hemorrhage		vitreous hemorrhages, retinal detachment
Grave's disease	auto-immune vs. thyroid	hyperthyroidism, goiter, ***exophthalmos*** , pretibial myxedema; lid retraction, orbital swelling, restricted extraocular muscle movement, exposure keratitis		
Atherosclerosis	occlusion of central retinal artery	sudden painless loss of vision; cherry-red macula; cotton wool spots, blood thinder retina		
Arteriolosclerosis	hypertension	AV nicking/humping; papilledema, optic nerve edema, arteriolar spasm		
Rheumatoid arthritis	auto-immune vs. connective tissue	dry eyes (abnl tears, keratitis sicca); scleritis; nodules in sclera, episclera; ulcerative keratitis	lubricants	
Ocular Trauma				
Chemical burns	alkaline penetrate eye; acids neutralized quickly		irrigation	
Corneal foreign bodies		pain, tearing, photophobia, discomfort; vision OK		
Corneal abrasion	often overuse of contact lens	pain, tearing	resolves w/ anesthetic	
Blunt ocular trauma		swelling, ecchymoses		can't look up if fractured floor of orbit
Hyphema	traumatic vessel rupture	vision loss; pain		
Eyelid laceration				non-opthy can repair if involves skin only and parallel to lid margin
Laceration/penetrating injury of globe				DO NOT palpate globe or evert eyelid; remove Fe or Cu from eye

Condition	Pathogenesis	Sx / Dx	Rx	Notes
Auditory Diseases				
Conductive hearing loss				
External auditory canal obstruction	due to cerumen impaction, foreign body, or EAC stenosis			
Tympanic membrane perforation	due to trauma or infection	hearing loss proportional to size of perforation	usu. close spontaneously; graft	perforation usu. painless
Otitis media	dampened vibration of tympanic membrane			
Acute otitis media (AOM)	S. pneumo, H. flu, Branhamella catarrhalis; poor eustachian tube fxn	sudden onset otalgia (pain), fever, purulent middle ear effusion, conductive hearing loss	antibiotics; if chronic, tympanostomy tube	pain is due to eardrum distension
Chronic otitis media w/ effusion	follows AOM or URI	painless conductive hearing loss, aural fullness; serous/mucoid effusion	ABs +/- steroids	may lead to cholesteatoma
Chronic suppurative otitis media	P. aeruginosa (smelly), S. aureus, E. coli, proteus	chronic purulent drainage through perf.; painless		
Cholesteatoma (keratoma)	acquired by tympanic membrane retraction (negative pressure), starts in pars flaccida -> pocket fills w/ debris -> pressure on middle ear		surgical removal	may get infected -> intermittent drainage -> often erodes incus -> hearing loss; intracranial complications if untreated
Otosclerosis	hereditary disorder of otic capsule (inner ear remodels) -> spongy bone formation near oval window -> fixation of stapes	gradually progressive conductive hearing loss (ear looks normal)	stapedectomy (replace w/ prosthesis)	
Otitis externa	usu. Pseudomonas	infection of skin -> swollen obstruction	ABs	"swimmer's ear"
Tumor	skin carcinoma (squamous cell or basal cell); glomus tympanicum or glomus jugulare tumors (similar to pheochromocytomas; red eardrum; pulsatile tinnitus)			
Aural atresia	congenital absence of ear canal - branchial cleft defect	usu. functional inner & middle ear		often Treacher-Collins syndrome
Sensorineural hearing loss				
Acoustic trauma	brief exposure to loud noise or prolonged exposure to medium noise -> outer hair cell destruction	damage worse at 4000 Hz	prevention	
Presbycusis	hair cell degeneration w/ ***aging***	damage worse at high frequencies		
Ototoxic drugs	***aminoglycosides*** (dose-related outer hair cell death), furosemide, quinine, salicylates (reversible), cisplatin, cytoxan, vincristine, vinblastine, vancomycin		monitor dose & serum levels	vestibular toxicity (tinnitus & disequilibrium)
Meniere's disease	idiopathic disease of inner ear; ***endolymphatic hypertension*** (hydrops)	fluctuating sensorineural hearing loss + episodic vertigo (2-3 hrs) + tinnitus (buzzing)	salt restriction; diuretics	similar to seizure, but no LOC
Congenital loss	1:4000 births; often acquired (rubella)	often part of known syndrome		
Cerebellopontine angle & IAC lesions	acoustic neuroma (vestibular schwannoma) -> compress CN V, brainstem; also meningioma, CN VII schwannoma, epidermoids, metastasis	early = ***unilateral*** sensorineural hearing loss, tinnitus, decr. speech discrimination; late = CN V findings, hydrocephalus; Dx: MRI		NF2 if bilateral (onset by age 30)
Infection	meningitis, syphilis, HSV neuritis	sudden sensorineural hearing loss		
Tinnitus	perception of sound w/o external acoustic stimulus			
Objective tinnitus	pulsatile (blood flow) = vascular tumor, AVM, etc.; middle ear myoclonus	internally generated, detectable by examiner		may be ***tumor*** if ***pulsatile or unilateral***
Subjective tinnitus	CNS response to absence of input (hearing loss)	not detectable by examiner		

Condition	Pathogenesis	Sx / Dx	Rx	Notes
Vestibular Disorders				
Acute Labyrinthine injuries				
Vestibular neuritis	viral lesion of CN VIII	sudden onset of severe ***vertigo*** (vestibular crisis); NO hearing loss; may have viral URI prodrome		gradual improvement after 1 day (compensation)
Labyrinthitis	viral, bacterial, syphilitic (fluctuating or progressive)	sudden onset of severe ***vertigo*** (vestibular crisis); ***hearing loss***		
Temporal bone fracture	transverse fracture	profound sensorineural loss; facial paralysis		compensates well if unilateral
Surgical trauma	stapes subluxation, stapedectomy, mastoidectomy			
Benign Paroxysmal Positional Vertigo (BPPV)	otoconial debris into endolymph of posterior canal; canalithiasis or cupulolithiasis	head movement causes 20 min vertigo spell; Hallpike maneuver (latency of eye mvmts; decr. nystagmus response on repeat test)	particle repositioning	
Chronic Labyrinthine injuries	also otosyphilis, perilymph fistula			
Meniere's disease		hearling loss + episodic vertigo + tinnitus		lasts > 20 min, < 24 hrs
Delayed onset vertigo syndrome		years after prior deafness; like Meniere's		
Mass Lesion				
Cholesteatoma	toxic labyrinthitis	vertigo		labyrinthine fistula from bone erosion
Tumor	acoustic neuroma, meningioma			
Vascular Disease	migraine, brainstem infarction, potine hemorrhage, CN VIII compression, thrombus/embolus			
Facial nerve paralysis	Bell's palsy (HSV neuritis, sarcoid, amyloid, diabetes, pregnancy, menstruation); herpes-zoster; Lyme disease; trauma (skull fracture, facial injury); neoplasm (slow onset, no recovery; parotid tumor, schwannoma); neurologic (MS, MG, GB); iatrogenic (parotid or otologic surgery); congenital		steroids; anti-virals	Bell's palsy has rapid onset (7-10 days), recover by 6 months; atypical if recurrent unilateral, slowly progressive, no recovery by 6 mos.
Oflactory Disorders				
Anosmia	obstructive sinus disease (inflammation -> polyp, cold, sinusitis, allergies), post-viral, trauma, toxins, neuro diseases	reversible loss of smell/taste		CT for mucosal dz, MRI for tumor
Larynx Disorders				
True vocal cord nodules	aka singer's nodes; due to ***voice overuse*** -> reactive inflammatory change	limitation of singing voice (high notes); incomplete closure of true vocal cords (***hourglass***)		
Unilateral vocal cord paralysis	nonlaryngeal malignancy, iatrogenic, idiopathic viral inflammation -> damage to recurrent laryngeal nerve	***breathy weak voice***		

Condition	Pathogenesis	Sx / Dx	Rx	Notes
Dementia	decline of intellectual function causing altered pattern of activity w/ unimpaired consciousness; caused by medical illness, medications (often reversible), psychiatric illness, brain disease (most common; Alzheimer's)	Sx: memory loss, impaired visual-spatial performance, apraxia, aphasia, disorientation, changes in behavior & personality		
Alzheimer's disease	***neuritic A β plaques*** = abnl 1-42 Aβ protein fragments (from APP) aggregate into amyloid pleated sheet; ***neurofibrillary tangles*** = hyperphosphorylated ***Tau*** protein autoassembly; ***synaptic & neuronal loss*** = posterior temporal-parietal cortex, posterior cingulate gyrus, nucleus basalis (cholinergic neurons)	***gradual progressive*** loss of intellect; ***memory loss*** is often 1st Sx; no focal motor, sensory, or visual loss; normal gait & continence until late; Dx: autopsy pathology	***cholinesterase inhibitors*** (tacrine, donepezil) if active cholinergic neurons; mega-dose ***vit E*** & ***selegiline*** /denepryl inhibit free radicals in 1st 5 yrs (mild AD)	usu. undiagnosed in 1st year; loses 3 pts/yr on MMSE; probable AD = typical, uncomplicated; possible AD = atypical, complicated; risk Fx = age, Down's syndrome, apolipoprotein E4, low educational or occupational level, family Hx of dementia, familial AD gene mutation
Familial Alzheimer's disease	autosomal dominant; **normal**: ***α -secretase*** cleaves APP extracellularly to form P3 fragment & then γ-secretase (presenilin) cleaves intracelullarly to form ***1,40 A β*** fragment; **abnormal**: ***β -secretase*** cleaves APP extracellularly & g-secretase (presenilin) cleaves intracelullarly to form ***1,42 A β*** fragment			
Frontal dementia	preferential anterior neuron loss in frontal association cortex & angular cingulate cortex (Broca > mute); widened sulci in frontal lobe, enlarged frontal horns of ventricles	***behavior & personality changes*** (memory less affected): personal neglect, impulsivity, disinhibition, tactless, lack of spontaneity, bizarre behavior; ***perseveration*** = difficulty changing focus or attention, difficulty intiating speech, odd repetitive behavior		no loss of motor, sensory, or visual cortices (like Alzheimer's)
FTDP-17 (fronto-temporal dementia w/ Parkinsonism ch. 17	autosomal dominant ***Tau protein mutation*** ; imbalance of Tau protein -> Tau inclusions -> focal neuron loss	early onset, progressive; preserved hippocampus (unlike Alzheimer's)		multiple ethnic origins
Pick's disease	neuronal cytoplasmic inclusions (Pick bodies on autopsy); peak age 45-60	circumscribed focal atrophy		
Parkinsonism dementias				
Dementia w/ Lewy bodies	cytoplasmic inclusions of ***α -synuclein*** ; loss of temporal-parietal cortex & primary visual cortex	***visual hallucinations*** ; fluctuation in alertness & attention; substantia nigra & ***cerebral cortex Lewy bodies***		1/3 have pure Lewy bodies; 2/3 have plaques & tangles like Alzheimer's
Progressive supranuclear palsy (PSP)	frontal dementia	motor Sx; ***supranuclear gaze palsy*** (can't voluntarily move eyes, but can reflexively); ***pseudobulbar affect palsy*** (flat facial expression, hyperactive jaw-jerk reflex, swallowing probs); ataxia & gait probs; ***axial rigidity*** (stiffness, bradykinesia) -> fixed neck posture		loss of downgaze before loss of horizontal gaze
Corticobasal degeneration (CBD)	sporadic, age > 55; neuronal loss in cortex & basal ganglia	mild dementia; ***asymmetric rigidity*** ; asymmetric apraxia (***alien hand***); achromatic neuronal inclusions		
Parkinson's disease	30% of PD pts have dementia (esp. elderly)	onset of motor Sx 1st (tremor)		dopaminergic drugs worsen hallucinations
Other dementias				
Multi-infarct dementia	mural thrombus -> emboli	***sudden onset, focal damage*** (motor & reflex); ***unilateral*** cognitive impairments; early seizures, gait & incontinence problems (unlike Alzheimer's); Dx: CT, MRI	treat underlying cause	***Hachinski ischemia score > 4*** (if 0-2, then probably Alzheimer's)
Normal pressure hydrocephalus	trauma or subarachnoid hemorrhage -> impaired absorption of CSF (no obstruction)	early urinary ***incontinence*** , ***gait*** problems ("***magnetic*** " - can't lift foot off floor), ***mild dementia*** ; Dx: very large ventricles, normal CSF pressure	drain ventricles of CSF	reversible if treated early
Creutzfeld-Jakob disease (CJD)	abnl protein = prion (self-replicating), can be destroyed by Chlorox (not formaldehyde or alcohol); 10% familial, 90% sporadic (1/million/year)	***rapidly progressive dementia*** ; begins focally, becomes severe; ***startle myoclonus*** ; rigidity; progressive periodic discharges on EEG; spongiform change & neuronal loss in cortex		transmitted by CNS tissue or blood; iatrogenic = pituitary extracts of GH
Mad cow disease	new variant CJD			prions in tonsils, lymphatics
Isolated memory impairment	aka ***mild cognitive impairment*** ; persistent progressive memory impairment or amnesia in person older than 50; increased risk for dementia (Alzheimer's)	no impairment of everyday activity		

Condition	Pathogenesis	Sx / Dx	Rx	Notes
Delirium	***transient reversible*** cerebral dysfxn w/ ***acute*** onset & wide range of ***fluctuating*** mental status abnormalities; due to ***cholinergic deficits*** ; risk groups = elderly, cardiotomy pts, burn pts, pre-existing brain dz, AIDS, drug withdrawal, NOT psychiatric pts	***fluctuating consciousness, attention deficit, disorientation*** (time > place >> person); prodrome, sleep-wake disturbances, impaired memory, disorganized thought/speech, altered perceptions, neuro deficits, slow diffused EEG, emotional disturbances	maintain ***safety*** 1st; monitor, treat underlying cause, minimize meds, Tx w/ haloperidol	neuro impairments = dysgraphia, dysnomic aphasia, constructional abnormalities, motor abnormalities; delirium tremens has fast low-voltage EEG
Alcohol Use				
Delirium tremens	alcohol withdrawal (3-5 days)	hallucinations, cardiovascular complications, hyperthermia, psychomotor agitation		high mortality
Wernicke-Korsakoff syndrome	thiamine (B1) deficiency in chronic alcoholics	confused state; amnesia; ataxia; paralysis of external eye muscles	thiamine supplements	
Fetal alcohol syndrome	drinking EtOH while pregnant (1st trimester)	mental retardation, congenital heart defects, microcephaly, hyperactivity, small size, facial features		apoptotic injury reproducible w/ benzodiazepines
Psychiatric Disorders				
Psychosis				
Schizophrenia	***incr. dopaminergic activity*** ; 1% lifetime risk; lower SE groups; genetic + environmental fx	positive Sx = delusions, hallucinations, thought disorganization; negative Sx = blunted affect		
Mood disorders		depression or mania		
Schizoaffective disorders		equal proportion of schizophrenia + mood disorder		
Delusional disorder	rare	non-bizarre delusions		
Brief psychotic disorder	very common; usu. occurs w/ ***personality disorders*** : paranoid, borderline, schizotypal, narcissistic, histrionic	< 1 month of Sx; return to full level of pre-morbid fxn		
Substance-induced disorder	alcohol or sedative withdrawal-induced			
Shared psychotic disorder				
Medical causes	any illness may affect brain			
Child & Adolescent Psychiatry				
Disruptive behavior disorders				
Attention deficit hyperactivity disorder (ADHD)	most common psychiatric disorder of children; M:F = 4-9:1	classic triad: ***inattention, hyperactivity, impulsivity***	stimulants, anti-HTN, antidepressants	
Conduct disorder (CD)	antisocial types of behaviors; M>F; boys have earlier onset	aggression to people & animals, destruction of property, deceitfulness & theft, serious rule violations	behavioral therapy	early onset -> worse prognosis
Oppositional defiant disorder (ODD)		hostile behavior usu. directed at authority figures (at least 6 mos.)		
Mood disorders	more chronic, familial, refractory than adult			
Major depression	prevalence jumps in adolescents	school difficulty, somatic complaints, aggressive behavior		dysthmia = mild form
Bipolar disorder	may be difficult to differentiate from substance abuse or ADHD	extremely irritable/explosive mood, unrestrained inappropriate laughter, impaired psychosocial fxn	mood stabilizers (meds important)	cyclothymia = mild form
Anxiety disorders				
Separation anxiety disorder	excessive anxiety when child leaves home or parent	manifests as stomach ache, headaches, school avoidance		
Obsessive-compulsive disorder	OCD often presents in children			
Post-traumatic stress disorder (PTSD)	re-experience trauma	autonomic arousal & avoidance		
Social phobia		fear of embarassment		
Generalized anxiety disorder		excessive worry		
Panic disorder		discrete panic attacks		
Psychotic disorders	rare in children, malignant	schizophrenia (impaired reality)		

Condition	Pathogenesis	Sx / Dx	Rx	Notes
Continue Child & Adolesc. Psychiatry				
Developmental disorder				
Autistic disorder	onset < 3 y.o. (babies don't cuddle); M:F = 4:1; 75% mentally retarded	***impaired social interactions, communication, behavior***		"idiot savant"
Asperger's disorder		normal language & cognition; restricted repetitive stereotyped behavior, interests, & activities		no delay in language or cognitive development
Rett's disorder	only females	normal fxn for 1st 5 mos; rapid deterioration -> death		
Childhood disintegrative disorder		normal for 1st 2 years; regression -> severe mental retardation		
Mental retardation		impaired intelligence, communication, self-care, social skills		mild (IQ 55-70), moderate (IQ 40-55), severe (IQ 25-40), profound (IQ < 25)
Learning disorders	normal intelligence, but abnormal performance; reading disorder (dyslexia), mathematics disorder, written expression disorder			
Communication disorders	expressive language disorder, mixed receptive-expressive language disorder, phonological disorder, stuttering			
Motor skills disorder	developmental coordination disorder			
Elimination disorders	prevalence decr. w/ age			
Encopresis	after age 4	repeated passage of feces into inappropriate places		
Enuresis	after age 5	voiding of urine into bed or clothes		often family history
Feeding & eating disorders	pica, rumination disorder, feeding disorder of infancy & early childhood			
Tic disorders	Tourette's, chronic motor or vocal tic disorder, transient tic disorder			
Selective mutism		won't speak in certain social situations, but normal at home		
Reactive attachment disorder of infancy & early childhood	due to severely bad parenting	disturbed & developmentally inappropriate ability to relate socially		
Eating Disorders				
Anorexia nervosa	etiology = hypothalamic dysfxn, endogenous opiates, family w/ marital probs, cultural biases, rxn to stresses of adolescence; 1% of adolescent girls; F>M	Dx: 15% below ideal weight, intense fear of weight gain, body image disturbances, amenorrhea; Sx: rigid perfectionist behavior, decr. sexual interest, Hx of sexual abuse, low caloric intake, loss of appetite (occurs late); course = variable	nutrition support & weight gain (often secretive & resistant to treatment)	comorbidities = depression, anxiety, OCD; complications = bradycardia, hypokalemia; **binge-purge type** = overlap w/ bulimia, high suicide rate, Hx of obesity; **restricting type** = low premorbid weight
Bulimia nervosa	etiology = endorphins after vomiting, thin culture bias, family depression, difficulty separating from mother; 1-3% of young women; F>M	Dx: lack of control of eating (binge), compensatory behavior to prevent weight gain, occurs > 2x/week for 3 mos., self-eval influenced by body shape; Sx: sexually active, ego dystonic (seek & accept help), often normal weight; course = most improve w/ Tx	psychotherapy (usu. respond well), antidepressants (reduce binge frequency)	comorbidities = disorders of mood, personality, impulse control, substance use, anxiety, dissociative; complications = Mallory-Weiss tears, hypokalemia, alkalosis; **purging type** = self-induced vomiting, laxatives, diuretics, enema; **non-purging type** = fasting, excess exercise
Somatoform Disorders	unconscious mechanism, unconscious motivation			
Somatization disorder	young onset; females; familial; low SE classes; 5-10% incidence	multiple symptoms/complaints; chronic; diffusely positive ROS	poor prognosis	somatization = process by which person consciously or unconsciously uses body for psychological purposes or personal gain
Conversion disorder	young onset; females; low SE classes	single symptom of acute neurological disease	good prognosis (except if chronic)	
Hypochondriasis	middle-age onset; epidosic	inaccurate interpretation of physical symptoms/sensations; preoccupation or fear of serious illness	fair prognosis	
Body dysmorphic disorder	young adults; rare	imagined or exaggerated feelings of ugliness or concern w/ body defect		
Pain disorder	older onset; females; familial	pain intensity incompatible w/ known physiology; co-morbid drug abuse		
Factitious Disorder	conscious mechanism, unconscious motivation; young males	feigned illness w/ no obvious gains	poor prognosis if chronic	
Malingering	conscious mechanism, conscious motivation; antisocial tendencies	feigned illness for secondary gain		

GOOD LUCK!