Common Problems in Neurology

Part 1

For Internal Medicine Residents (R2)

Wisan Teeratantikanon, MD, FRCP(T)

Outline

- Back to Basic
- Spinal cord
- CNS demyelination
- Dementia
- Stroke
- Brain death
- Horner's syndrome
- Parinaud syndrome
- NMS and serotonin syndrome
- Plexus disorder
- Gait abnormality

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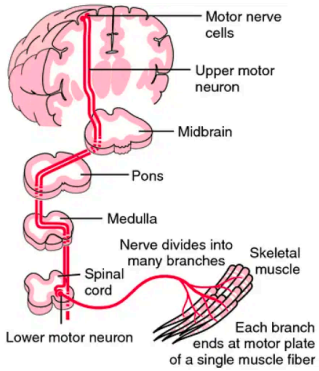
UMN vs LMN Signs



	UMNL	LMNL
Lesion	Above the anterior horn cell in the spinal cord or above the nuclei of the cranial nerves	Anterior horn cell, motor nerve fibre or neuromuscular junction
Tone	Increased (spasticity) ± clonus	Reduced
Muscle weakness	All muscle groups of the lower limb – more marked in the flexor muscles. In the upper limb weakness is more marked in the extensors	More distally than proximally. Both flexors and extensors affected
Deep tendon reflexes	Increased (but superficial reflexes such as abdominal reflexes are usually absent)	Reduced or absent
Plantar response	Extensor (upgoing toe)	Normal or absent
Fasciculation	Absent	May be present in anterior horn cell lesions
Wasting	Late; mainly because of disuse	Usually present

Approach to weakness

DISEASE	HISTORY	STRENGTH	DEEP TENDON REFLEX	SENSATION	WASTING
Myelopathy	Trauma, infection, cancer	Normal to decreased	Increased	Normal to decreased	No
Motor neuron disease (ALS)	Progressive difficulty swallowing, speaking, walking	Decreased	Increased	Normal	Yes
Neuropathy	Recent infection Ascending weakness	Normal or decreased Distal > proximal	Decreased	Decreased	Yes
Neuromuscular junction disease	Food (canned goods) Tick exposure Easy fatigability	Normal to fatigue	Normal	Normal	No
Myopathy	Thyroid disease Previous similar episodes	Decreased Proximal > distal	Normal	Normal	Yes

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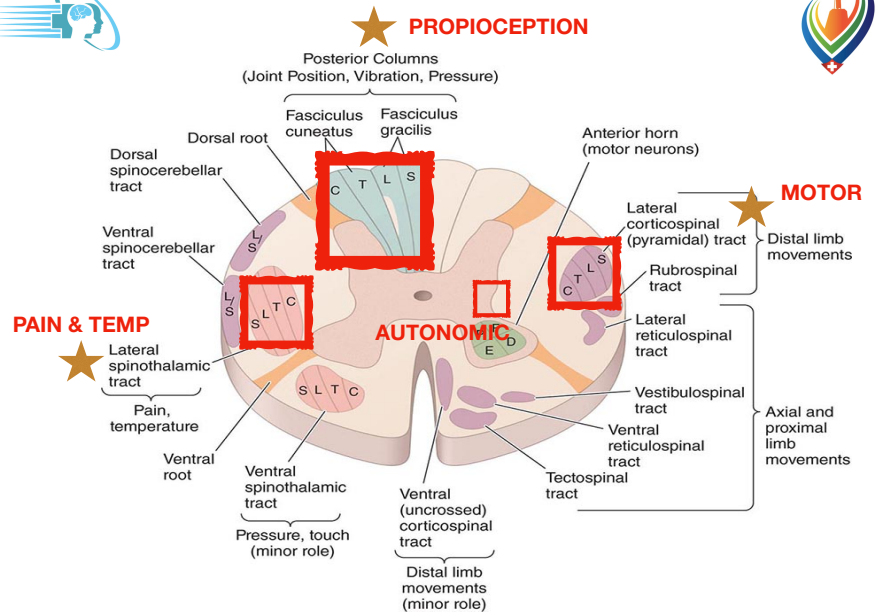


Bradleys Neurology in Clinical Practice, 7th Edition.

Myelopathy
Extrinsic vs. Intrinsic cord

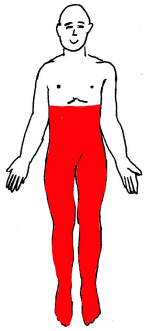
	Extrinsic cord	Intrinsic cord
Pain	Radicular pain (dermatome)	Funicular pain (ill-defined)
Bone pain	Vertebral pain	-
Sensory	Ascending (sensory level)	Descending, hanging, cape-like
Saddle	Saddle or perineal numbness	Sacral sparing
Motor	Ascending	Descending
Autonomic	Late	Early
LMN sign	-	Widespread with atrophy
UMN sign	Early pyramidal	Late

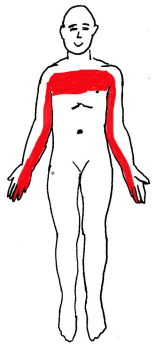
Common causes

Myelitis DDx
- MS/ NMO
- SLE, MCTD, SS, Behcets
- Sarcoidosis
- Post viral or bacterial infections

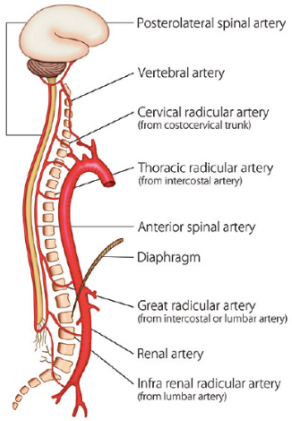
Rx: IVMP in acute attack

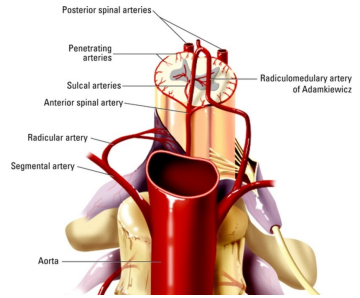
Extrinsic cord	Intrinsic cord
Infection (Bacteria/TB) • Spondylodiscitis • Epidural abscess	Transverse myelitis
Tumor • Metastasis (Solid/ Hematologic) • Primary (meningioma, NF)	Syringomyelia
Degenerative	Tumor (astrocytoma, ependymoma)
Epidural Hematoma	Cord Ischemia
	HSP





Spinal cord ischemia

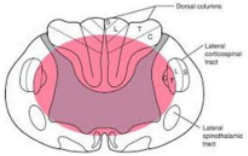


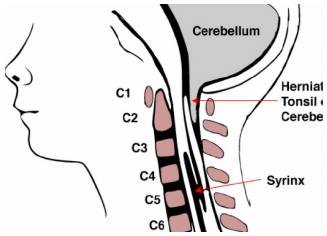


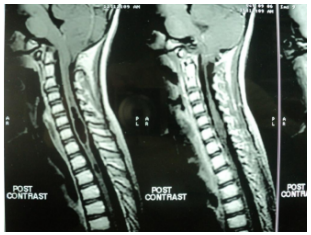
- Anterior cord syndrome is most common
- Clinical
  - Spare posterior column (PPS and VBS)
  - Water shed area = mid T level (T4-T8)
- Cause
  - **Vascular surgery** with descending aorta involvement eg. **AAA Sx, TEVAR**
  - Shock

Syringomyelia

- Expansion of central canal, cervical is most common
- Central cord syndrome
  - Chronic bilateral arms weakness and numbness, atrophy
  - Lower limbs hyperreflexia
- Etiology: Chiari malformation, Posttraumatic, Post spinal Sx
- DDx with CSM/CSR, MND

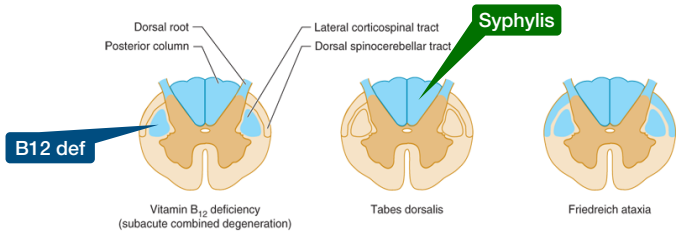




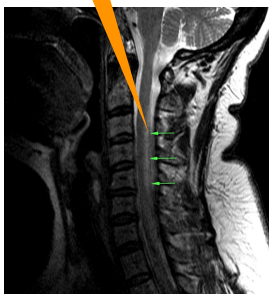


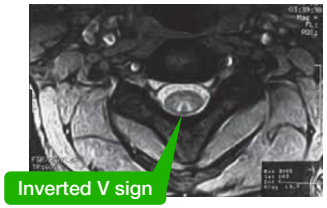
Posterior cord syndrome

- Presentation: impair vibration and fine touch and pyramidal tract sign
- DDx
  - SCD: B12 def, Cu def, Zn toxicity (cause Cu def)
  - Friedreich's ataxia: AR, >50% hereditary ataxia, mutation FRDA, chrmosome9, progressive limb and gait ataxia, dysarthria, absent DTR at legs and extensor response to BBK
  - Syphilis - Tabes dorsalis
  - HIV



Subacute combine degeneration





- Posterior column = VBS, ataxia
- Lateral column (corticospinal tract) = weakness, spastic paresis
- Others: dementia, peripheral neuropathy, megaloblastic anemia

- Causes
  - B12 deficiency: Pernicious anemia, Crohn's dz, GI surgery
- Ix: Serum B12, Methylmalonic acid, Schilling test, CBC, **MRI: hyperT2 at posterior column**
- Rx: B12 IM OD x 1wk then weekly for 1 month then monthly lifelong

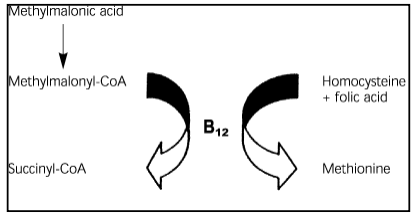
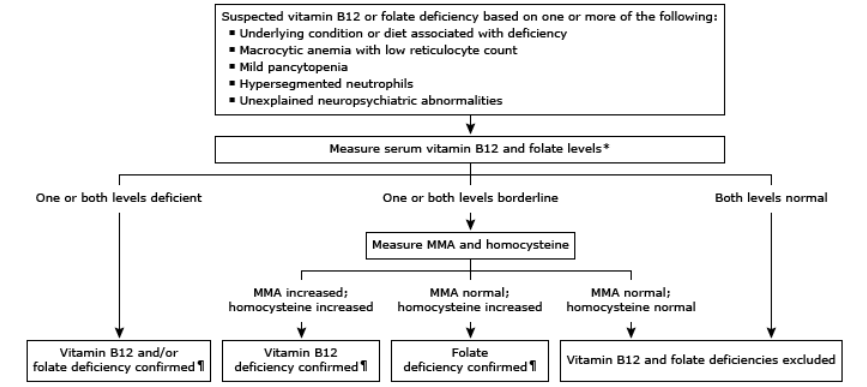


Table 2. Clinical Manifestations of Vitamin B_{12} Deficiency

Cutaneous	
	Hyperpigmentation
	Vitiligo
Gastrointestinal	
	Glossitis
	Jaundice
Hematologic	
	Anemia (macrocytic, megaloblastic)
	Thrombocytopenia
Neuropsychiatric	
	Cognitive impairment
	Gait abnormalities
	Irritability
	Peripheral neuropathy
	Weakness

Diagnostic testing for suspected vitamin B12 or folate deficiency



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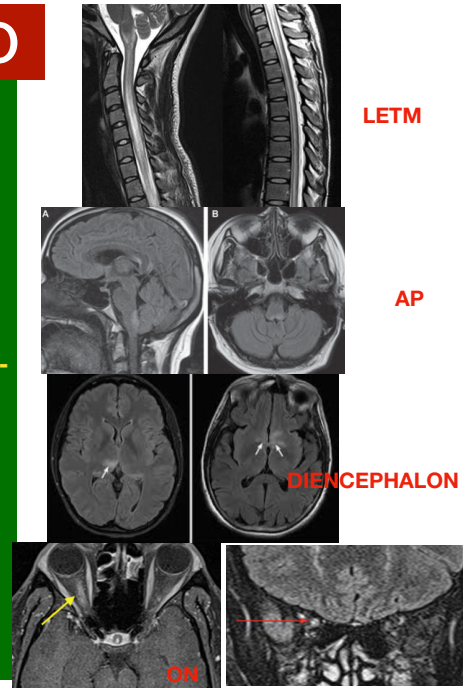
NMO

NMO

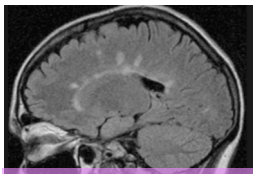
- Immune demyelination
  - **ATM** (Long-extensive TM >=3 cords)
  - **ON**
  - **Area postrema**: hiccups or N/V
  - **Brainstem** syndrome
  - **Cerebral**
  - **Diencephalic**
- Ix: MRI, **Serum NMO IgG or AQP4-IgG**
- **Rx:**
  - Attack: **IVMP** if not response or severe —> **PLEx**
  - **Long term (at least 5 year)**: attack prevention: immunosuppressant: **Aza, MMF, RTX**



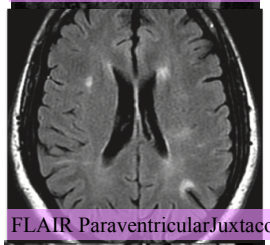
Neuromyelitis optica spectrum disorder (NMOSD)

Clinical features

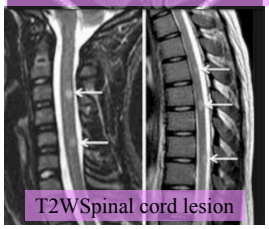
- Optic neuritis
- Acute myelitis
- Area postrema syndrome: hiccups or N/V
- Acute brainstem syndrome
- Symptomatic narcolepsy or acute diencephalic clinical syndrome with NMOSD-typical diencephalic MRI lesions
- Symptomatic cerebral syndrome with NMOSD-typical brain lesions



FLAIR PV : Dawson's finger



FLAIR ParaventricularJuxtacortical



T2WSpinal cord lesion

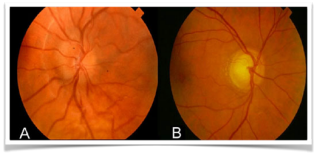
MS

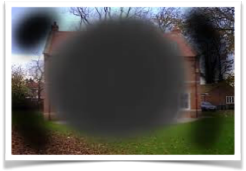
- MS
  - DIS
    - ~~ON~~
    - ATM
    - Periventricular
    - Juxtacortical/ cortical
    - Infratentorial
  - DIT
    - >1 episodes
    - CSF OCB
  - Rx
    - IVMP —> PLEX if not response (PLEX is adjective Rx, level B)
    - DMT: IFN-B, Fingolimod, glatiramer, natalizumab,

Multiple sclerosis

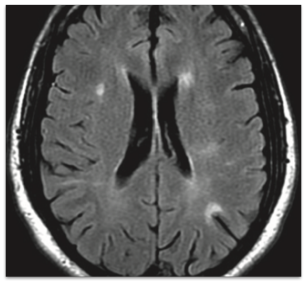
Clinical features

- onset between ages 15 and 50 yr
- Involvement of multiple areas of the CNS
- Optic neuritis
- Lhermitte's sign
- INO
- Fatigue
- Worsening with elevated body temp

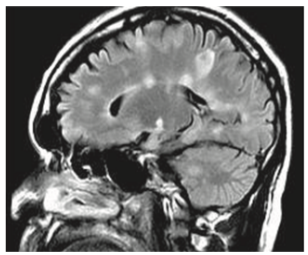




Bradley's Neurology in Clinical Practice edition7

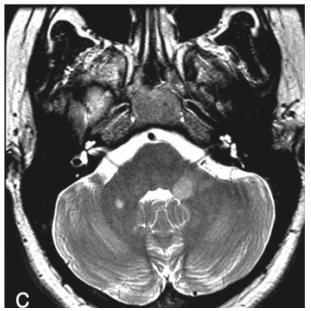


FLAIR ParaventricularJuxtacortical

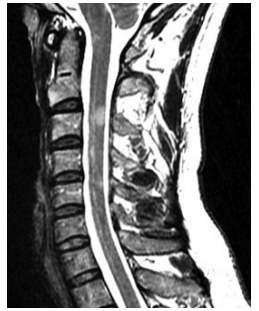


FLAIR PV : Dawson's finger

Typical MRI of MS lesion



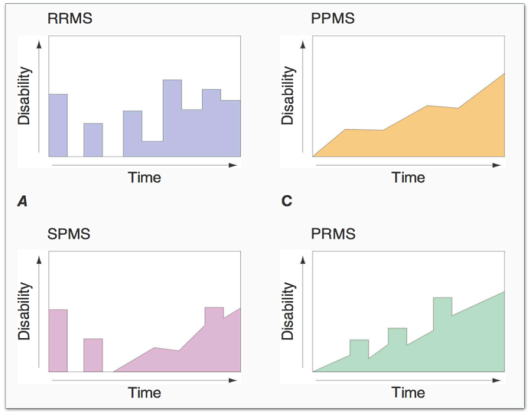
T2W Infartentorial



T2WSpinal cord lesion

Bradley's Neurology in Clinical Practice 7 edition

Clinical Subtype of MS



Harrison's Principle of Internal Medicine 19 edition

	NMOSD	MS
ATM	• Longitudinally extensive lesion (>=3 vertebral segments) • Central/gray matter involvement	• Short, often multiple lesions • Peripheral/asymmetrical/often posterior
ON	• Long-length/posterior-chiasmal lesions	• Short-length lesions
Brain	• Periependymal lesions	• Dawson fingers • S-shaped U-fiber
	• Serum NMO IgG (AQP4) > CSF	• CSF Oligoclonal band (OCB) > Serum

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Clinical Clue for Dementia

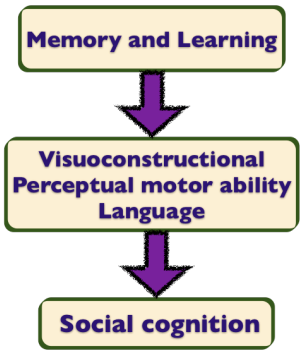
- **AD:** memory impairment, other normal
- **VaD, NPH:** early prominent gait disturbance + mild memory loss
- **PDD:** dementia after well establish of PD > 1 yr
- **DLB:** parkinsonism < 1 yr, fluctuating alertness, visual hallucination
- **PSP:** vertical supranuclear gaze paresis

Clinical Clue for Dementia

- **FTD:** prominent behavioral with intact navigation, focal anterior predominant atrophy
- **CJD:** rapid progression, myoclonus, rigidity
- **B12 deficiency:** dementia, loss JPS and vibration, Babinski signs, anemia

Alzheimer's disease

- *>65 yr , Hippocampal lesion*
- *Early : recent memory deficit and abstract thinking*
- Chronic course / very slow progression / not fluctuation
- *Dx: MMSE < 27 (20-26=mild, 10-20=mod, <10=severe)*
  - **memory and one of** aphasia/apraxia/ agnosia/executive function
- Imaging Hippocampal atrophy



Medication in AD

- *ChEIs (+) ระวัง ADR : bradycardia, N/V, wt loss*
  - *Donepezil (Aricept)*
  - *Rivastigmine (Exelon, oral or patch)*
  - *Galantamine (Reminyl)*
- *NMDA antagonist (+)*
  - *Memantine (Ebixa): use in mod to severe Dz*

Thai Dementia Guideline 2020

	Donepezil บัญชี จ(2)*	Rivastigmine	Galantamine	Memantine	EGb 761®	Nicergoline	Citicoline/Cerebrolysin/Piracetam
Mild Cognitive Impairment (MCI)	ไม่น่าทำ (II, A)	ไม่ควรทำ (I, B)	ไม่ควรทำ (I, A)	ไม่ควรทำ (I, B)	**(III, A)**	ไม่มีข้อมูล (III, A)	ไม่ควรทำ (I, A)
Alzheimer's disease -Mild	ดี (I, A)	ดี (I, A)	ดี (I, A)	ไม่ได้ผล (I, A) (ไม่ควรให้เป็น Monotherapy)	**พอใช้ (III, B)**	ข้อมูลไม่ชัดเจน (ไม่น่าให้ II, C)	ข้อมูลไม่ชัดเจน (ไม่ควรให้ I, D)
-Moderate	ดี (I, A)	ดี (I, A)	ดี (I, A)	ดี (I, A)	**พอใช้ (III, B)**	ข้อมูลไม่ชัดเจน (ไม่น่าให้ II, C)	ข้อมูลไม่ชัดเจน (ไม่ควรให้ I, D)
-Severe	ดี (II, A)	ดี (II, B) (เฉพาะชนิด patch)	ข้อมูลไม่ชัดเจน (III, B)	ดี (I, A)	**ไม่มีข้อมูล** (ไม่น่าให้ II, D)	ไม่มีข้อมูล (ไม่น่าให้ II, D)	ไม่มีข้อมูล (ไม่ควรให้ I, D)
Vascular dementia (mild to moderate)	ดี (I, A)	พอใช้ (III, B)	ดี (I, A)	ดี (II, A)	**พอใช้ (II, B)**	ข้อมูลไม่ชัดเจน (ไม่น่าให้ II, C)	ข้อมูลไม่ชัดเจน (ไม่ควรให้ I, D) ยกเว้น piracetam (ไม่น่าให้ II, B)

Ref: แนวทางเวชปฏิบัติภาวะสมองเสื่อม 2563

Drug caution in dementia

- **Anti-chol : จะไปขัดขวาง**การจับของ Ach to muscarinic
  - CPM, diphen, TCA, benztropine, artane, norgesic
- **Cholinergic drug : ไปเสริมฤทธิ์** Ach : bradycardia
  - Urecholine

Dementia with depression, anxiety, repetitive action

- SSRIs
  - ***Sertraline (++) (Zoloft)***
  - ***Escitalopram (++) (Lexapro)***
  - Fluoxetine (+) (Prozac)
- Antidepressant
  - Mirtazapine (+) (Remeron)
  - Trazodone (+)

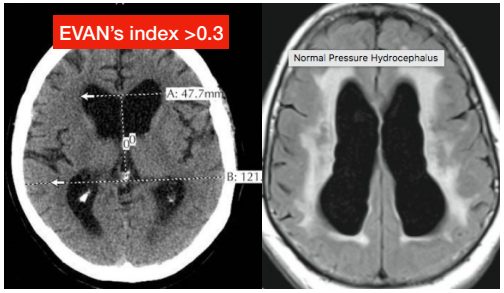
Dementia with psychosis or insomnia

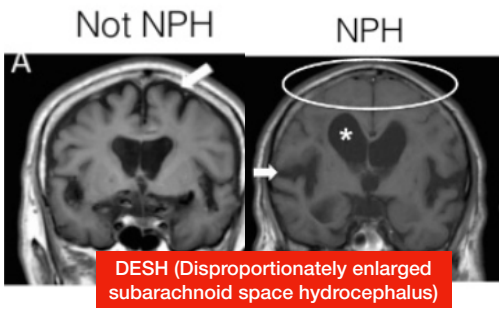
- Insomnia
  - Antipsychotic ที่ง่วงเยอะ = quetiapine, SSRI
  - BZD -> only short half life: lorazepam
- Hallucination/ agitation/ agression
  - atypical antipsychotic
    - quetiapine (+), olanzapine (+), risperidol (+), aripipazole (+)
  - Mood stabilizers
    - Valproate (+)

Dementia PLUS frontal sign

- **NPH** (dementia+ataxia from gait apraxia+urinary incontinence)
- **FTD** (frontotemporal dementia)
- **VaD** (SVD)

NPH



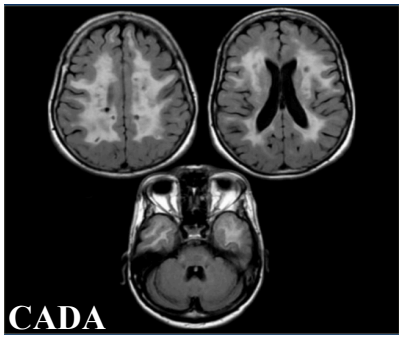


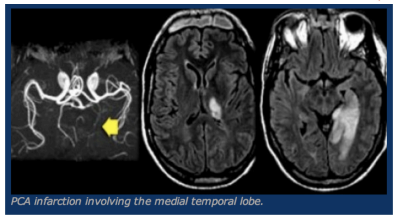
- Insidious >3-6mo, age >40y
- No antecedent event
- Examination
  - Gait: apractic, magnetic, parkinsonian gait, retropulsion (Magnetic gait of external hip rotation, low foot clearance, short strides and prominent truncal sway or instability)
  - Cognition: psychomotor slowing, executive
  - Urinary incontinence
- NOT SEEN: papilledema, seizure, headache
- Dx: LP OP<18, release 50ml

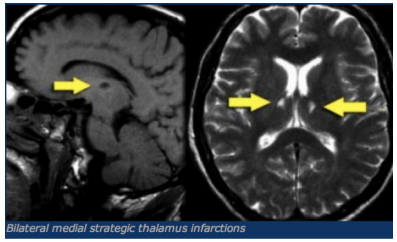
Vascular dementia (VaD)

- **Acute stepwise or fluctuating decline** in cognition and intervening periods of stability and even some improvement
- **Gradual onset with slow progression**
  - Due to **small vessel disease** leading to lesions in the white matter, basal ganglia and/or thalamus
- **Complex attention, speed of information processing and executive ability**
- **Typical: Impair retrieval of memory, psychomotor retadation, gait abnormal (frontal gait)**

Vascular dementia (VaD)



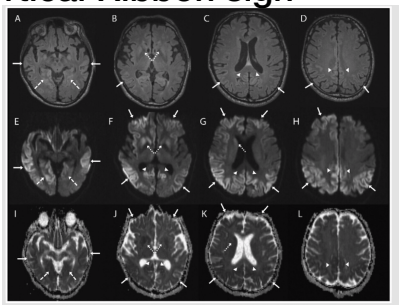


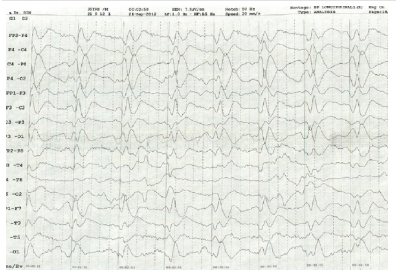


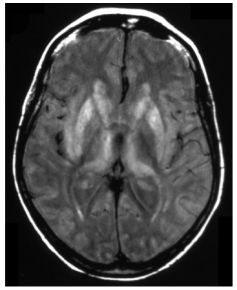
CJD

- **M/C human prion Dz** (but rare)
- ***57 - 62 yr***
- **KEY : myoclonus + dementia + gait disturbance**
- rapidly progressive disease (3-6 mo and death in 1yr)
- ***Dx : gold standard : Bx but not necessary, others (S-100, CSF 14-3-3)***
- ***MRI : putamen and head of caudate, hockey stick, puvinar sign (thalamus), cortical ribbon sign***
- EEG : periodic spike/sharp and wave complex (high sp)
- no specific Rx

Cortical Ribbon sign







- **T2:** hyperintensity
  - basal ganglia (putamen and caudate)
  - thalamus (see hockey stick sign and pulvinar sign)
  - cortex: most common early manifestation
  - white matter
- **DWI/ADC:** persistent restricted diffusion (considered the most sensitive sign)

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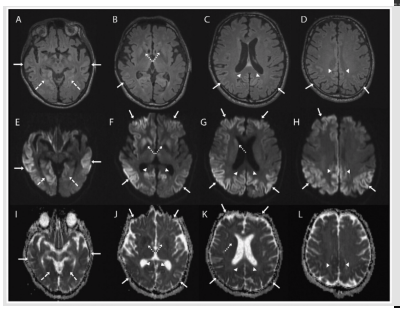
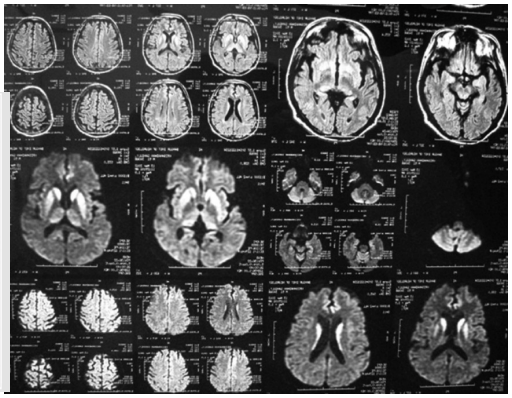
:ial PD-weighted MRI showing hockey stick-like thalamic hyperintensities. The pulvinar signal is not ore intense than in other subcortical nuclei.





sCJD Dx Criteria

- **1. Progressive dementia**
- 2. One of **myoclonus**, pyramidal/extrapyramidal symptoms, visual/ cerebellar dysfunction, akinetic mutism
- 3. Either:
  - typical **EEG**
  - elevated **CSF protein 14-3-3**
  - Typical **MRI** (cingulate, striatum, neocortex)
- 4. Not suggest other alternative diagnosis

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- Plexus disorder
- Gait abnormality

Carotid or Vertebral Dissection

Carotid dissection

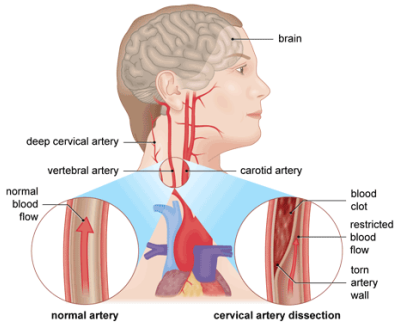
- Unilateral neck head pain
- **Horner's** syndrome on same side
- Contralateral neurologic signs

Vertebral dissection

- Pain in upper neck and occiput
- Ass. With **lateral medullary syndrome** or cerebellar infarction

Vertebral artery dissection

- *Clinical*
  - **Neck pain and headache (75%)**
  - **Stroke (72%)TIA (32%)**
  - **Lateral medullary syndrome (34%)**
- *Predisposing factors*
  - **Trauma**
    - **major (penetrating/nonponetrating)**
    - **minor (chiropractic manipulation)**
  - **Primary arteriopathies:**
    - Marfan's syndrome, Ehlers-Danlos syndrome
    - Homocystinuria, Fibromuscular dysplasia,
    - Pseudoxanthoma elasticum
  - Others
    - HT, OC, smoking, migrain, positive FHx, Congenital heart disease,

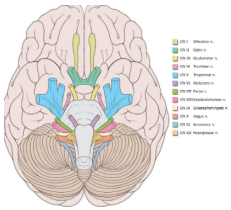


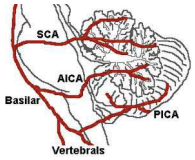
Treatment of arterial dissection

- Acute stroke (<4.5hr): **Thrombolytic** if no contraindicated
- **Antithrombotic** (If no SAH) either:
  - **Anticoagulant**
  - **Antipletelet**
- **Surgery** (or endovascular treatment) if growing of endovascular recanalization of dissection

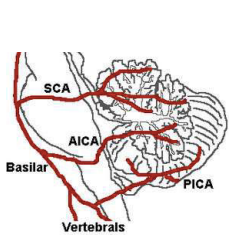
Brain Stem Syndrome

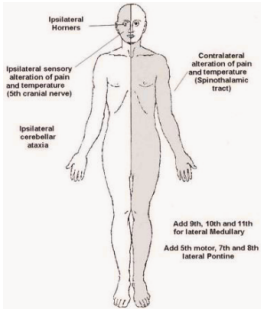
Medial syndrome	Lateral syndrome
Motor (contralateral)	**S**ensory (contralateral, PPS)
Medial lemniscus (contralateral VBS, proprioceptive)	**S**pinocerebellar tract (ipsilateral cerebellar sign)
MLF (ipsilateral INO)	**S**ympathetic pathway (ipsilateral Horner's syndrome)
Motor nucleus of CN 3,4,6,12 (ipsilateral)	**S**ensory nucleus of CN5 (ipsilateral facial sensory loss)
Penetraing brach of BA	PICA, AICA, SCA

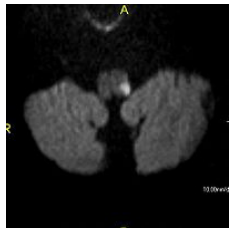


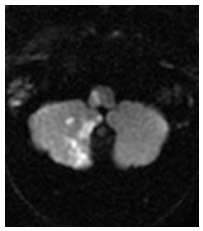


Wallenberg Syndrome

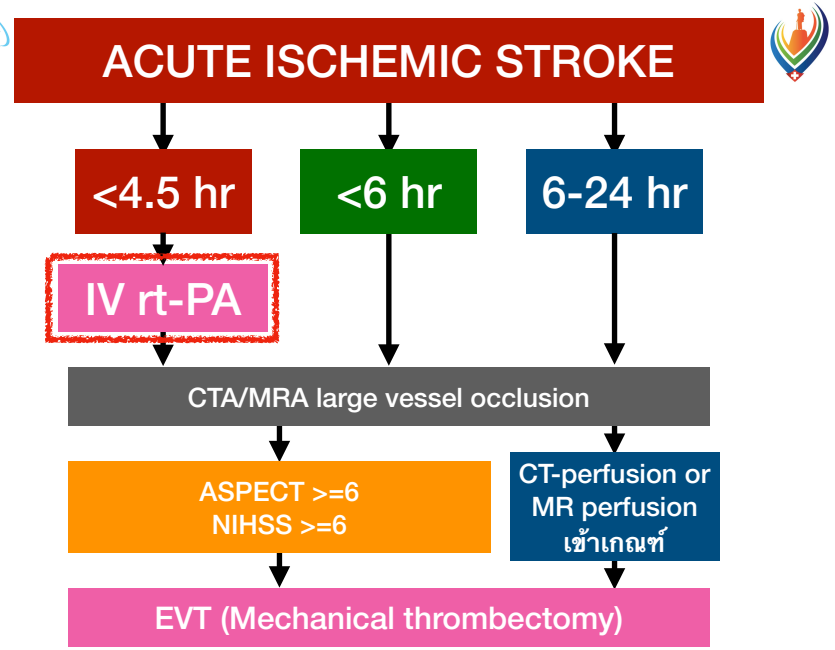








- **Wallenberg syndrome**
  - Lateral medullary syndrome or PICA infarction
  - Contralateral
    - Sensory loss of arm and leg spare face
  - Ipsilateral
    - Impair sensation of face
    - Ataxia of limb, nystagmus, nausea, vertigo
    - Horner's syndrome
    - Dysphagia, hoarseness, vocal cord paralysis (CN9,10,11)

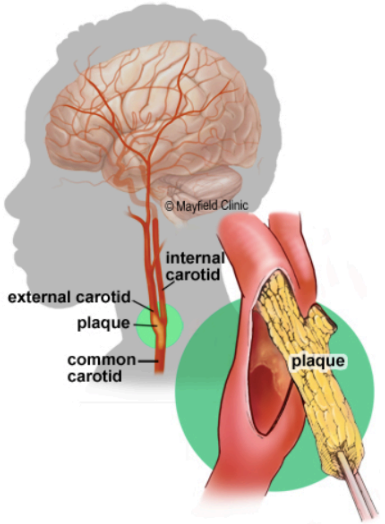


Secondary prevention Antithrombotic

- Small vessel disease — Antiplatelet
- Large vessel disease — Antiplatelet, CEA
- **Cardioembolic stroke** — Anticoagulation
- Others hypercoagability
  - Antiphospholipid syndrome — Anticoagulation
  - Protein C/S deficiency — Anticoagulation

Carotid Endarterectomy (CEA)

- **Extracranial** carotid artery
- **Symptomatic** stenosis
- **Severe** stenosis (70-99%)
- Pre-op Good **mRS**
- **CTA** or **MRA**
  or Carotid duplex (**CDUS**)



Outline

- Back to Basic
- Spinal cord
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Brain death

1. **deep coma**, rule out other cause
2. no spontaneous **respiration**
3. **irreversibal** brain damage
4. **no brain function**
    1. **no spont movement/ epileptic jerk/ decerebrate/ decorticate**
    2. **no BS reflex**
        1. fixed, dilated pupil
        2. corneal reflex
        3. motor response within CN function
        4. Doll eye
        5. caloric test
        6. gag and cough reflex
    3. **no spont respiration in 10 min >>> PaCO2 >60**
    4. คงที่มากกว่า **6hr** in 4.1-4.3
    5. Dx by 3 doctors: **เจ้าของไข้,หัวหน้าแพทย์ และประสาทแพทย์ และถ้าผ่าเพื่อบริจาคอวัยวะต้องไม่มีแพทย์ผู้ผ่าตัดด้วย**
    6. Optional: no cerebral BF, silent EEG

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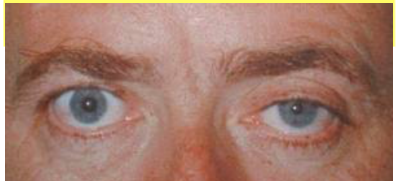
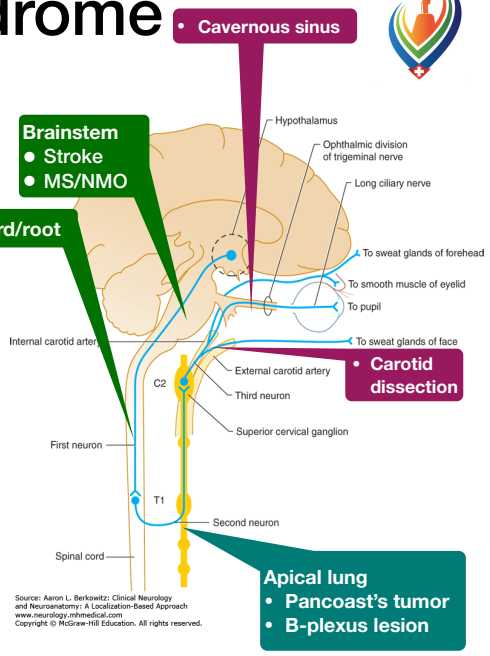
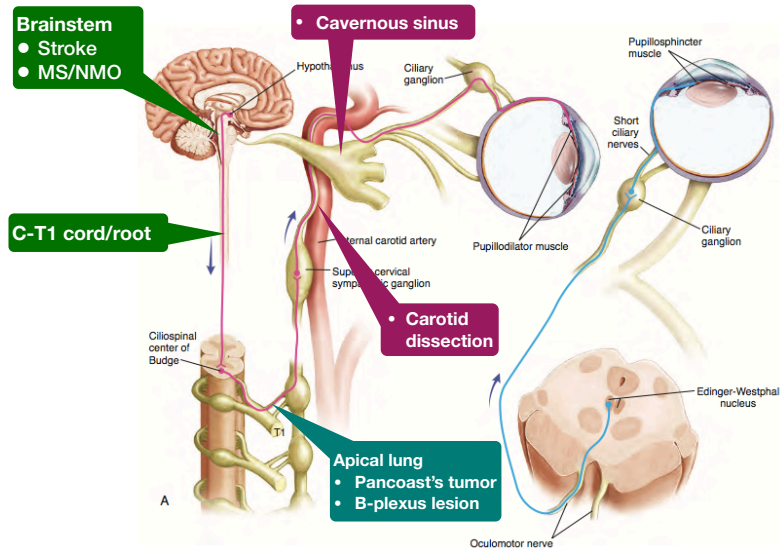
Horner's Syndrome

- **1st order (central)**
    - hypothalamus + brainstem + SC
    - เหงื่อหายครึ่งซีก**ทั้งตัว**
- **2nd order (preganglionic)**
    - cervical gg. (apical lung/ thyroid CA)
    - เหงื่อหาย**ใบหน้า**ครึ่งซีก
- **3rd order (postganglionic)**
    - carotid a., cavernous sinus
    - **ถ้า lesion อยู่ distal to carotid bifurcation)** เหงื่อหายครึ่งซีกเฉพาะ**หน้าผาก**





Horner's Syndrome



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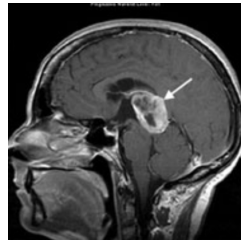
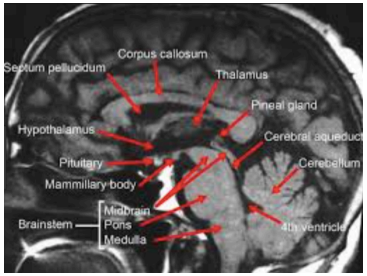
Parinaud's Syndrome

- Upward gaze palsy
- Light near dissociation
- Collier's sign (lid retraction)
- Convergence retraction nystagmus (co-contraction)

- Dorsal midbrain syndrome
- Cause
  - Mass at pineal region : GCT
  - Hydrocephalus (3rd ven)
  - MB infarction
  - Demy (MS/NMO)





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NMS

- neuroleptic drug
  - typical gr. (**haldol, fluphanazine, chlorpromazine**)
  - atypical gr. (**risperidone, clozapine, olanzapine**)
  - antiemetic (**plasil**, promethazine)
- ***Tetrad (Dx = 2/4)***
  1. ***AOC***
  2. ***lead-pipe rigidity, dystonia, trismus***
  3. ***T>38 C***
  4. ***ANS instability : inc/dec BP, inc HR, diaphoresis***
- Ix : CK
- Rx : stop drug (idiosyncrasy)
  - supportive : euvolume, elyte, lower temp.(cooling,para,ASA),lower BP(**nitroprusside**), agitation(**BZD**), Rx rhabdo
  - ***Dantroline or bromocriptine and/or amantadine after not response to supportive care 1-2d***
  - ECT if not response after 1wk

Serotonin syndrome

- SSRIs : inc serotonin activity in CNS, less severe than NMS
- present within **24hr (most 6hr),** prominent lower extremity
- ***Hunter criteria : drug Hx PLUS one of***
  - ***spont clonus***
  - ***inducible clonus PLUS agitation or diaphoresis***
  - ***ocular clonus PLUS agitation or diaphoresis***
  - ***tremor PLUS hyperreflexia***
  - ***hypertonia PLUS T>38 PLUS ocular clonus/inducible clonus***
- Rx : stop drug
  - supportive : normalize V/S, O2 keep SpO2>94, IV fluid, lower temp.
  - ***SEDATE : BZD to eliminate agitation, tremor/myoclonus, dec HR/BP***
  - **cyproheptadine (12mg PO) if fail BZD**
  - IF T>41.1 : immediate sedate, paralysis, ETT, avoid para and NSAIDs

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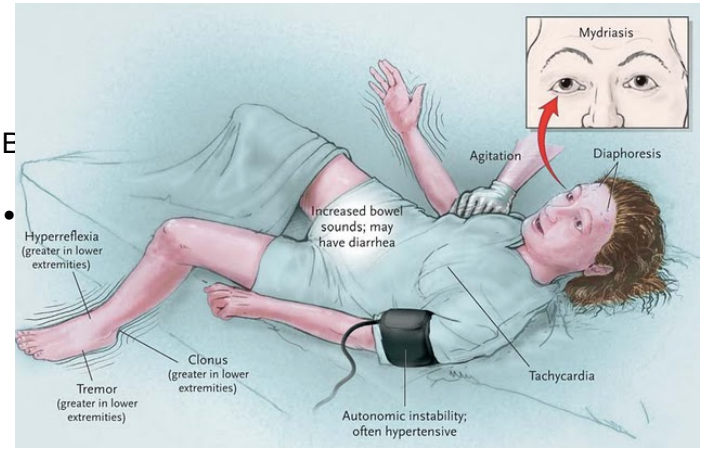

Serotonin syndrome : drugs

- ***SSRIs : fluoxetine, fluvoxamine, paroxetine, sertraline, citalopram, escitalopram***
- SNRIs : duloxetine, venlafaxine, milnacipran
- MAOIs : phenelzine, selegiline, rasagyline, linezolid, methyline blue
- ***TCA, tryptans, trazodone***
- others: bupropion, Li, levodopa, cocain, amphetamine (fenfluramine,sibutramine), **plasil**, carbamazepine, depakene, dextrometrophan, tramol, MDMA (ecstasy)

ALTERED MENTAL STATUS + ELEVATED TEMPERATURE
IN ADDITION TO SEPSIS, CONSIDER THE FOLLOWING (CULPRIT IS OFTEN POLYPHARMACY)

	EXPOSURE	MUSCLE TONE	MUCOSA & SKIN	PUPILS	BOWEL SOUNDS	REFLEXES
NEUROLEPTIC MALIGNANT SYNDROME	ANTIPSYCHOTICS	RIGID	WET	NORMAL	↔	BRADYREFLEXIA
SEROTONIN SYNDROME	SEROTONERGICS (antidepressants, fentanyl, linezolid, sumatriptan, ondansetron)	RIGID	WET	↑	↑	↑
ANTICHOLINERGIC TOXIDROME	ANTICHOLINERGICS	NORMAL	DRY	↑	↓	NORMAL
MALIGNANT HYPERTHERMIA	INHLALED ANESTHETICS SUCCINYLCHOLINE	RIGID	WET	NORMAL	↓	↓

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Brachial plexopathy

- Cause:
  - Acute
    - trauma (eg. direct trauma, root avulsion, backpack palsy),
    - metabolic
    - inflammatory(neuralgic amyotrophy)
  - Chronic
    - malignancy
    - radiation

Nontraumatic brachial plexopathy

- **Neuralgic amyotrophy: idiopathic brachial plexitis**
- **Neoplastic: breast and lung CA, invade *LOWER* plexus** (inferior trunk and medial cord) > upper
- **Radiation induced plexopathy : *UPPER* plexus**
- **BP related to diabetes: usually LS plexus,** mononeuropathy such as median and ulnar n. Or more proximal - BP
- Thoracic outlet syndrome: rare, lower trunk plexopathy stretching by congenital fibrous band > slow progressive atrophic weakness of intrinsic hand and numbness of ulnar and median part of forarm (motor>sensory)

Inflammatory brachial plexopathy (Neuralgia amyotrophy)

- Paralytic brachial neuritis, **idiopathic** brachial plexopathy: **immune** mediated
  - Predisposing: infection, exercise, Sx, pregnancy, puerperium, vaccination
- **Multifocal** > global process, **motor** > more vulnerable than sensory nerve
- SS
  - **severe acute unilateral pain followed by patchy weakness in upper/ middle plexus pain lasting upto 4 wk**
    - Bilateral pain ~29%, almost asymmetric
  - Sensory: hypesthesia, paresthesia at lateral shoulder/arm/hand
  - **Atrophic weakness: 1/3 within first 24 hr of pain, can varies >2wk after pain**
    - Recovery of strength within several months to several years

Inflammatory brachial plexopathy (Neuralgia amyotrophy)

- **Dx: clinical + Electrodiagnosis**
- Rx: conservative, PT, **steroid, analgesic, or IVIG**
  - Recovery in 1-3 years, slow, mostly good recovery
  - Recurrent 26%, most in >2 yr

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Gait abnormalities please youtube

- Trendelemberg gait : hip abductor waekness ยกและกางสะโพกไม่ขึ้น: เดินยกสะโพกสูง
- Calcaneal gait or flatfoot gait : calf weakness เขย่งไม่ได้> postpoliomyelitis
- **Steppage gait : footdrop** ต้องยกเท้าสูงๆ
- vaulting gait : inability to flex hip or knee or any impairment of LE
  - ก้าวไปแล้วเขย่งทันที (เป็น compensation ของอีกข้าง)
- **circumduction gait : hemiplegic gait**
  - ใช้แกว่งขาช่วย
- **festinant gait : PD**
  - เดินด้วยปลายเท้า หัวพุ่ง ก้าวถี่ๆ
- Scissors gait : hip adductor spasticity: CP child
- **Waddling gait or myopathic gait : prox m. weakness**
- **stamping: sensory ataxia**

Common Problems in Neurology

Part 1

For Internal Medicine Residents (R2)

Wisan Teeratantikanon, MD, FRCP(T)