



核心課程編號：B42

# 譫妄症

神經內科

本教材僅供教學或研究使用



# Common etiologies

## Toxins

Prescription medications: especially those with anticholinergic properties, narcotics, and benzodiazepines

Drugs of abuse: alcohol intoxication and alcohol withdrawal, opiates, ecstasy, LSD, GHB, PCP, ketamine, cocaine, "bath salts," marijuana and its synthetic forms

Poisons: inhalants, carbon monoxide, ethylene glycol, pesticides

## Metabolic conditions

Electrolyte disturbances: hypoglycemia, hyperglycemia, hyponatremia, hypernatremia, hypercalcemia, hypocalcemia, hypomagnesemia

Hypothermia and hyperthermia

Pulmonary failure: hypoxemia and hypercarbia

Liver failure/hepatic encephalopathy

Renal failure/uremia

Cardiac failure

Vitamin deficiencies: B<sub>12</sub>, thiamine, folate, niacin

Dehydration and malnutrition

Anemia

## Infections

Systemic infections: urinary tract infections, pneumonia, skin and soft tissue infections, sepsis

CNS infections: meningitis, encephalitis, brain abscess

## Endocrine conditions

Hyperthyroidism, hypothyroidism

Hyperparathyroidism

Adrenal insufficiency

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## Cerebrovascular disorders

Global hypoperfusion states

Hypertensive encephalopathy

Focal ischemic strokes and hemorrhages (rare): especially nondominant parietal and thalamic lesions

## Autoimmune disorders

CNS vasculitis

Cerebral lupus

Neurologic paraneoplastic syndromes

## Seizure-related disorders

Nonconvulsive status epilepticus

Intermittent seizures with prolonged postictal states

## Neoplastic disorders

Diffuse metastases to the brain

Gliomatosis cerebri

Carcinomatous meningitis

CNS lymphoma

## Hospitalization

Terminal end-of-life delirium

**Abbreviations:** GHB,  $\gamma$ -hydroxybutyrate; LSD, lysergic acid diethylamide; PCP, phencyclidine.



# Stepwise evaluation of a patient with 『 Delirium 』

## Initial evaluation

- History with special attention to medications (including over-the-counter and herbals)
- General physical examination and neurologic examination
- Complete blood count
- Electrolyte panel including calcium, magnesium, phosphorus
- Liver function tests, including albumin
- Renal function tests

## First-tier further evaluation guided by initial evaluation

- Systemic infection screen
  - Urinalysis and culture
  - Chest radiograph
  - Blood cultures
- Electrocardiogram
- Arterial blood gas
- Serum and/or urine toxicology screen (perform earlier in young persons)
- Brain imaging with MRI with diffusion and gadolinium (preferred) or CT
- Suspected CNS infection: lumbar puncture after brain imaging
- Suspected seizure-related etiology: EEG (if high suspicion, should be performed immediately)

## Second-tier further evaluation

- Vitamin levels: B<sub>12</sub>, folate, thiamine
- Endocrinologic laboratories: TSH and free T<sub>4</sub>; cortisol
- Serum ammonia
- Sedimentation rate
- Autoimmune serologies: ANA, complement levels; p-ANCA, c-ANCA. consider paraneoplastic serologies
- Infectious serologies: RPR; fungal and viral serologies if high suspicion; HIV antibody
- Lumbar puncture (if not already performed)
- Brain MRI with and without gadolinium (if not already performed)

**Abbreviations:** c-ANCA, cytoplasmic antineutrophil cytoplasmic antibody; CNS, central nervous system; p-ANCA, perinuclear antineutrophil cytoplasmic antibody; RPR, rapid plasmin reagin; TSH, thyroid-stimulating hormone.



# Differential diagnosis of 『Coma』

1. Diseases that cause no focal or lateralizing neurologic signs, usually with normal brainstem functions; CT scan and cellular content of the CSF are normal.
  - a. Intoxications: alcohol, sedative drugs, opiates, etc.
  - b. Metabolic disturbances: anoxia, hyponatremia, hypernatremia, hypercalcemia, diabetic acidosis, nonketotic hyperosmolar hyperglycemia, hypoglycemia, uremia, hepatic coma, hypercarbia, Addisonian crisis, hypo- and hyperthyroid states, profound nutritional deficiency
  - c. Severe systemic infections: pneumonia, septicemia, typhoid fever, malaria, Waterhouse-Friderichsen syndrome
  - d. Shock from any cause
  - e. Postseizure states, status epilepticus, nonconvulsive status epilepticus
  - f. Hypertensive encephalopathy, eclampsia
  - g. Severe hyperthermia, hypothermia
  - h. Concussion
  - i. Acute hydrocephalus

2. Diseases that cause meningeal irritation with or without fever, and with an excess of WBCs or RBCs in the CSF, usually without focal or lateralizing cerebral or brainstem signs; CT or MRI shows no mass lesion.
  - a. Subarachnoid hemorrhage from ruptured aneurysm, arteriovenous malformation, trauma
  - b. Acute bacterial meningitis
  - c. Viral encephalitis
  - d. Miscellaneous: fat embolism, cholesterol embolism, carcinomatous and lymphomatous meningitis, etc.



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3. Diseases that cause focal brainstem or lateralizing cerebral signs, with or without changes in the CSF; CT and MRI are abnormal
  - a. Hemispherical hemorrhage (basal ganglionic, thalamic) or infarction (large middle cerebral artery territory) with secondary brainstem compression
  - b. Brainstem infarction due to basilar artery thrombosis or embolism
  - c. Brain abscess, subdural empyema
  - d. Epidural and subdural hemorrhage, brain contusion
  - e. Brain tumor with surrounding edema
  - f. Cerebellar and pontine hemorrhage and infarction
  - g. Widespread traumatic brain injury
  - h. Metabolic coma (see above) with preexisting focal damage
  - i. Miscellaneous: Cortical vein thrombosis, herpes simplex encephalitis, multiple cerebral emboli due to bacterial endocarditis, acute hemorrhagic leukoencephalitis, acute disseminated (postinfectious) encephalomyelitis, thrombotic thrombocytopenic purpura, cerebral vasculitis, neurologic paraneoplastic syndromes, gliomatosis cerebri, pituitary apoplexy, intravascular lymphoma, etc.



# Management strategy for new-onset coma

- ❖ Initial resuscitation
- ❖ History and general physical examination
- ❖ Focused neurologic examination
- ❖ Diagnostic tests



# 術後譫妄症的可能原因

## ❖ 常見病因

- 顱外/系統性
- 顱內/中樞神經
- 物質/藥物--中毒或戒斷(脫癮)

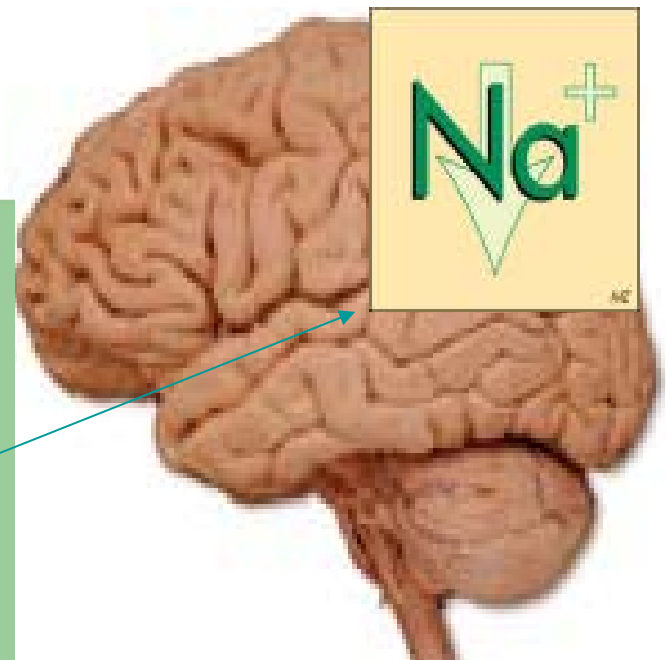
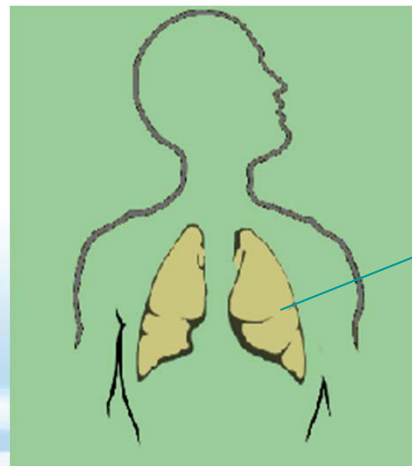




# 譫妄之病因探討

## ❖ 鑑別診斷--針對病因:

- 代謝--電解質,內分泌,營養狀態
- 中毒/脫癮
- 感染,敗血症
- 創傷:失血,低容積



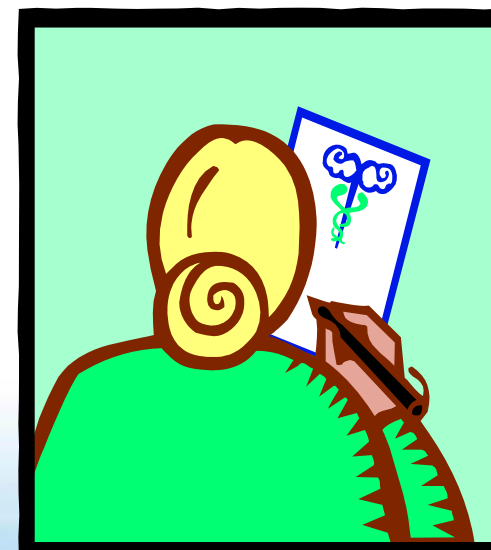


# 譫妄之病因探討

❖ 需快速鑑別的項目

❖ **WHHHIMP--**

- **W**ernicke encephalopathy/**W**ithdrawal( Alcohol)
- **H**ypoxia
- **H**ypoglycemia
- **H**ypoperfusion to the brain
- **H**ypertensive crisis
- **I**ntracranial hemorrhage...
- **M**eningitis, encephalitis
- **P**oisoning



意識障礙相關的實驗室數據與影像檢查的判讀注意範疇

## 病因 -Summary

- Drug intoxication and withdrawal
- Metabolic disturbance
- Endocrinopathy
- Infection (CNS or systemic)
- Head injury
- Epilepsy
- Vascular
- Neoplastic
- Vitamine and other nutritional deficiency
- Other (pain, sleep deprivation, sensory deprivation)