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Delirium

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Delirium

- Delirium is a transient, reversible cerebral dysfunction that has an acute or subacute onset and is manifest clinically by a wide range of fluctuating mental status abnormalities.

Source: Wise MG, Brandt GT. Delirium. In Yudofsky SC, Hales RE. Neuropsychiatry, 2nd Edition. Washington, D.C., American Psychiatric Press, 1992.

Mental Status Abnormalities in Delirium

- Global cognitive impairment in
  - Thinking
  - Memory
  - Perception
- Decreased attention
- Change in the level of consciousness
- Agitation or decreased motor activity
- Disturbances in the sleep-wake cycle

Reasons it is important to know about Delirium

- It is common.
- It can be the presenting feature of a fatal or serious illness.
- Delirious patients can be dangerous.
- Physicians often fail to recognize it.
- It is stressful to patients and families.

Epidemiology of Delirium

- Occurs in 10-30% of hospitalized medical/ surgical patients
- Predisposed patient populations:
  - Elderly patients
  - Post-cardiotomy patients
  - Burn patients
  - Patients with pre-existing brain disease
  - Patients in drug withdrawal
  - Patients with AIDS

TABLE 12–1. TERMS USED TO DENOTE DELIRIUM

Acute brain failure	Exogenous psychosis
Acute brain syndrome	Infective-exhaustive psychosis
Acute brain syndrome with psychosis	Intensive care unit (ICU) psychosis
Acute confusional state	Metabolic encephalopathy
Acute dementia	Oneiric state
Acute organic psychosis	Organic brain syndrome
Acute organic reaction	Reversible cerebral dysfunction
Acute organic syndrome	Reversible cognitive dysfunction
Acute reversible psychosis	Reversible dementia
Acute secondary psychosis	Reversible toxic psychosis
Cerebral insufficiency	Toxic confusion state
Confusional state	Toxic encephalopathy
Dysergastic reaction	

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Clinical Features of Delirium

- Prodromal symptoms
  - Restlessness
  - Disrupted sleep
  - Anxiety
  - Irritability
- Fluctuating course
- Attentional deficits

Clinical Features of Delirium, continued

- Altered arousal and psychomotor abnormalities
  - Hyperactive
  - Hypoactive
  - Mixed
- Sleep-wake disturbance
- Impaired memory
  - Immediate
  - Recent

Clinical Features of Delirium, continued

- Disorganized thinking and impaired speech
- Disorientation
  - Time>>Place
- Altered perceptions; can develop into
  - Delusions
  - Visual Hallucinations
  - Auditory and tactile illusions

Clinical Features of Delirium, continued

- Neurologic abnormalities:
  - Dysgraphia
  - Dysnomic aphasia
  - Constructional abnormalities
  - Motor abnormalities
  - EEG findings
    - diffuse slowing
    - low voltage, fast activity in hyperactive, agitated patients

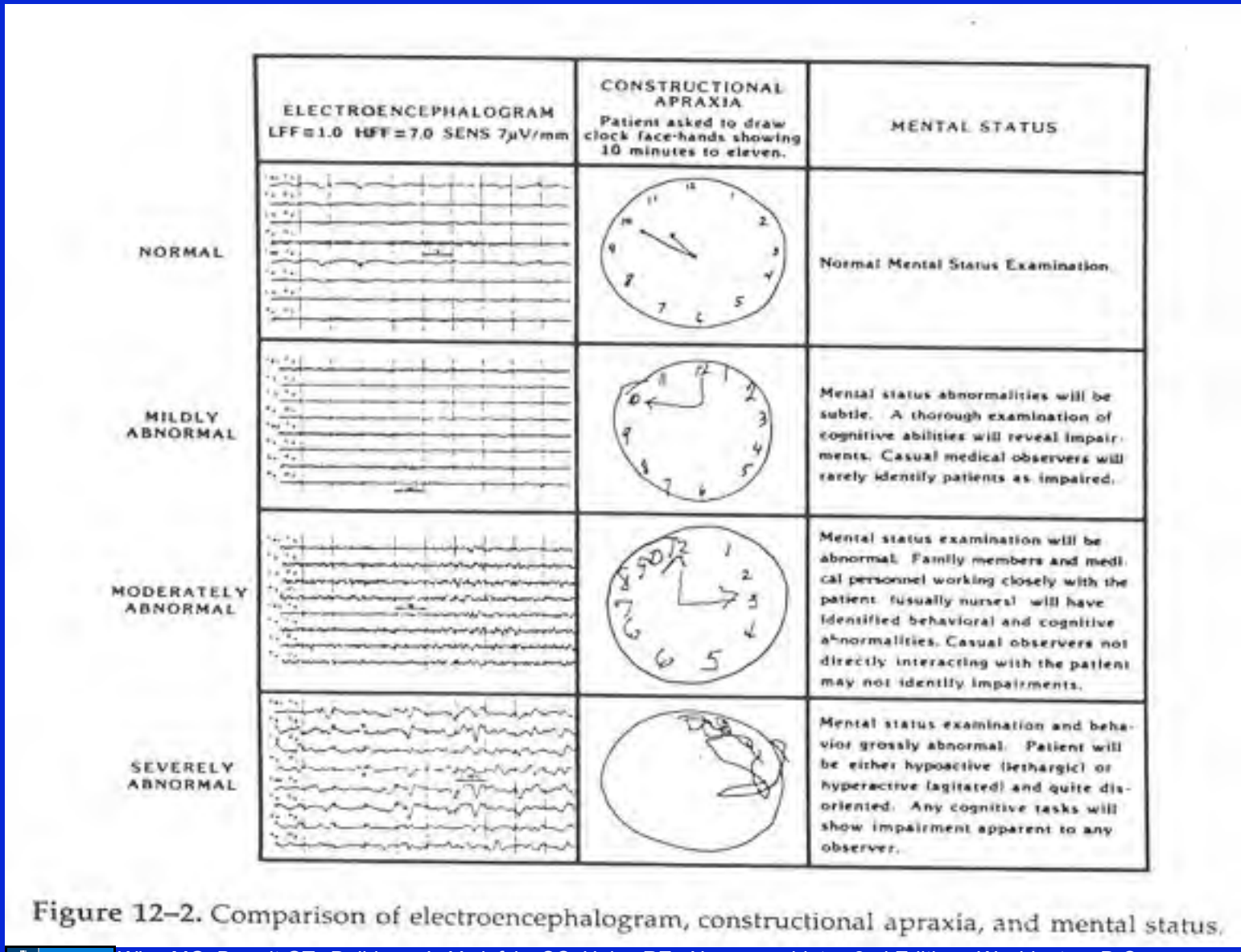

Figure 12–2. Comparison of electroencephalogram, constructional apraxia, and mental status.

Wise MG, Brandt GT. Delirium. In Yudofsky SC, Hales RE. Neuropsychiatry, 2nd Edition. Washington, D.C., American Psychiatric Press, 1992.

Clinical Features of Delirium, continued

- Emotional disturbances
  - Anxiety
  - Panic
  - Fear
  - Anger
  - Sadness
  - Depression
  - Apathy
  - Euphoria (Steroid delirium)

Differential Diagnosis of Delirium

Psychoses (Schizophrenia, Mania)

- EEG can help differentiate

Dementia

- Distinguishing features

Delirium vs. Dementia

Delirium	**Dementia**
Acute onset	Insidious
Fluctuation	Stable over the day
Lasts hours to days	Chronic
Low or hyper-alert	Normal alertness
Distractible	Attention normal

Delirium vs. Dementia (cont.)

Delirium	**Dementia**
Impaired orientation for time, mistake unfamiliar for the familiar	Impaired orientation
Immediate, recent memory impairment	Global memory impairment
Disorganized thinking	Impoverished thinking
Illusions, hallucinations	Perceptual disturbances are rare

Pathophysiology of Delirium

- Not clear
- Best supported hypothesis is a cholinergic deficit
- Other hypotheses

Causes of Delirium

TABLE 12–5. DIFFERENTIAL DIAGNOSIS FOR DELIRIUM: EMERGENT ITEMS (WHHHHIMP)

Diagnoses	*Clinical questions*
Wernicke's encephalopathy or Withdrawal	Ataxia? Ophthalmoplegia? Alcohol or drug history? Increased mean corpuscular volume (MCV)? Increased sympathetic activity (e.g., increased pulse, increased blood pressure (BP), or sweating)? Hyperreflexia?
Hypertensive encephalopathy	Increased BP? Papilledema?
Hypoglycemia	History of insulin-dependent diabetes mellitus? Decreased glucose?
Hypoperfusion of central nervous system	Decreased BP? Decreased cardiac output (e.g., myocardial infarct, arrhythmia, cardiac failure)? Decreased hematocrit?
Hypoxemia	Arterial blood gases (decreased P_{O_2})? History of pulmonary disease?
Intracranial bleeding or Infection	History of unconsciousness? Focal neurological signs?
Meningitis or encephalitis	Meningeal signs: Increased white blood count? Increased temperature? Viral prodrome?
Poisons or medications	Should toxic screen be ordered? Signs of toxicity (e.g., pupillary abnormality, nystagmus, or ataxia)? Is the patient on a drug that can cause delirium?

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TABLE 12–7. DIFFERENTIAL DIAGNOSIS FOR DELIRIUM: CRITICAL ITEMS (I WATCH DEATH)

Infectious	Encephalitis, meningitis, and syphilis
Withdrawal	Alcohol, barbiturates, sedative-hypnotics
Acute metabolic	Acidosis, alkalosis, electrolyte disturbance, hepatic failure, and renal failure
Trauma	Heat stroke, postoperative, and severe burns
CNS pathology	Abscesses, hemorrhage, normal pressure hydrocephalus, seizures, stroke, tumors, and vasculitis
Hypoxia	Anemia, carbon monoxide poisoning, hypotension, and pulmonary or cardiac failure
Deficiencies	Vitamin B_{12}, niacin, and thiamine and hypovitaminosis
Endocrinopathies	Hyper- or hypoadrenocorticism and hyper- or hypoglycemia
Acute vascular	Hypertensive encephalopathy and shock
Toxins or drugs	Medications (see Table 12–6), pesticides, and solvents
Heavy metals	Lead, manganese, and mercury

Wise MG, Brandt GT. Delirium. In Yudofsky SC, Hales RE. Neuropsychiatry, 2nd Edition. Washington, D.C., American Psychiatric Press, 1992.

TABLE 12–6. DRUGS THAT CAN CAUSE DELIRIUM

Antibiotic
- Acyclovir (antiviral)
- Amphotericin B (antifungal)
- Cephalexin (Keflex)
- Chloroquine (antimalarial)

Anticholinergic
- Antihistamines
  - Chlorpheniramine (Ornade and Teldrin)
- Antiparkinson drugs
  - Benztropine (Cogentin)
  - Biperiden (Akineton)
- Antispasmodics
- Atropine/homatropine
- Belladonna alkaloids
- Diphenhydramine (Benadryl)
- Phenothiazines (especially thioridazine)
- Promethazine (Phenergan)
- Scopolamine
- Tricyclic antidepressants (especially amitriptyline)
- Trihexyphenidyl (Artane)

Anticonvulsant
- Phenobarbital
- Phenytoin (Dilantin)
- Sodium valproate (Depakene)

Anti-inflammatory
- Adrenocorticotropic hormone
- Corticosteroids
- Ibuprofen (Motrin and Advil)
- Indomethacin (Indocin)
- Naproxen (Naprosyn)
- Phenylbutazone (Butazolidin)

Antineoplastic
- 5-Fluorouracil

Antiparkinson
- Amantadine (Symmetrel)
- Carbidopa (Sinemet)
- Levodopa (Larodopa)

Antituberculous
- Isoniazid
- Rifampin

Analgesic
- Opiates
- Salicylates
- Synthetic narcotics

Cardiac
- β-Blockers
- Propranolol (Inderal)
- Clonidine (Catapres)
- Digitalis (Digoxin and Lanoxin)
- Disopyramide (Norpace)
- Lidocaine (Xylocaine)
- Mexiletine
- Methyldopa (Aldomet)
- Quinidine (Quinidine, Quinaglute, and Duraquine)
- Procainamide (Pronestyl)

Drug withdrawal
- Alcohol
- Barbiturates
- Benzodiazepines

Sedative-hypnotic
- Barbiturates (Miltown and Equanil)
- Benzodiazepines
- Glutethimide (Doriden)

Sympathomimetic
- Amphetamines
- Phenylephrine
- Phenylpropanolamine
- Cimetidine (Tagamet)
- Disulfiram (Antabuse)
- Lithium
- Metrizamide (Amipaque)
- Metronidazole (Flagyl)
- Podophyllin by absorption
- Propylthiouracil
- Quinacrine
- Theophylline
- Timolol ophthalmic

Over-the-counter
- Compoz
- Excedrin P.M.
- Sleep-Eze
- Sominex

Miscellaneous
- Aminophylline
- Bromides
- Chlorpropamide (Diabinese)

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Course of Delirium

- Recovery
- Progression to stupor or coma
- Chronic brain syndrome (dementia)
- Death
- ? Chronic delirious state

Morbidity and Mortality in Delirium

- Both are high
- In-hospital complication rate 6 times that of non-delirious patients
- 25% of patients with in-hospital diagnosis of delirium die within 6 months
- When compared with demented patients, delirious patients have 5.5 times greater in-hospital mortality

TABLE 12-8. NEUROPSYCHIATRIC EVALUATION OF THE PATIENT

Mental status

- Interview (assess level of consciousness, psychomotor activity, appearance, affect, mood, intellect, and thought processes)
- Performing tests (memory, concentration, reasoning, motor and constructional apraxia, dysgraphia, and dysnomia)

Physical status

- Brief neurological exam (reflexes, limb strength, Babinski reflex, cranial nerves, meningeal signs, and gait)
- Review past and present vital signs (pulse, temperature, blood pressure, and respiration rate)
- Review chart (labs, abnormal behavior noted and if so when it began, medical diagnoses, VDRL, or FTA-ABS+?)
- Review medication records (correlate abnormal behavior with starting or stopping medications)

Laboratory examination—basic

- Blood chemistries (electrolytes, glucose, calcium, albumin, blood urea nitrogen, ammonia [NH_4^+], and liver functions)
- Blood count (hematocrit, white count and differential, mean corpuscular volume, sedimentation rate)
- Drug levels (need toxic screen? medication blood levels?)
- Arterial blood gases
- Urinalysis
- Electrocardiogram
- Chest X ray

Laboratory—based on clinical judgment

- Electroencephalogram (seizures? focal lesion? and confirm delirium)
- Computed tomography (normal pressure hydrocephalus, stroke, and space occupying lesion)
- Additional blood chemistries (heavy metals, thiamine and folate levels, thyroid battery, LE prep, antinuclear antibodies, and urinary porphobilinogen)
- Lumbar puncture (if indication of infection or intracranial bleed)

Note. FTA-ABS = fluorescent treponemal antibody absorption; VDRL = Venereal Disease Research Laboratory; LE prep = lupus erythematosus prep.

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Management of Delirium

- Treat underlying medical cause(s)
- Assure safety
  - Sitters
  - Restraints
- Close monitoring
  - Vital signs
  - Labs

Management of Delirium, continued

- Minimize all medications
- Pharmacological management
  - Haloperidol Risperidone
  - Benzodiazepines
- Psychosocial support and education
- Environmental approaches

“ICU Psychosis” = Delirium

Additional Source Information

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