Acute Confusional State

Management in ED

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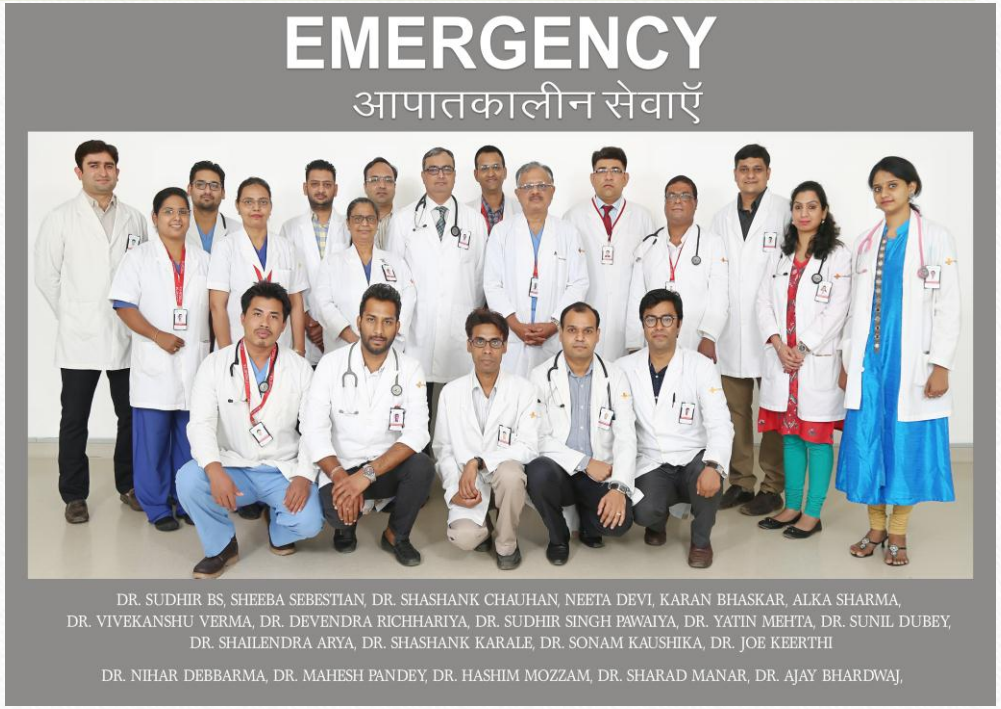
GURUGRAM-**INDIA**

- IGI AIRPORT NEW DELHI

Tajmahal ….

Hospital where I work & ED Team..



ACUTE CONFUSIONAL STATE

CASE SUMMARY-1

- 29 years young male
- Brought to Emergency department at around 1:50 am midnight after road traffic accident on national highway
- **In a Acute Confusional State & Agitated**
- He was driving with co-passenger in a car who was brought in dead

CASE SUMMARY-2

- A 68-year old woman brought to the ED by paramedics
- **Bizarre behaviour, altered sensorium with drowsiness.**
- She doesn’t have any previous psychiatric admissions.
- She was on diuretics for hypertension.

There are various terms used in ED

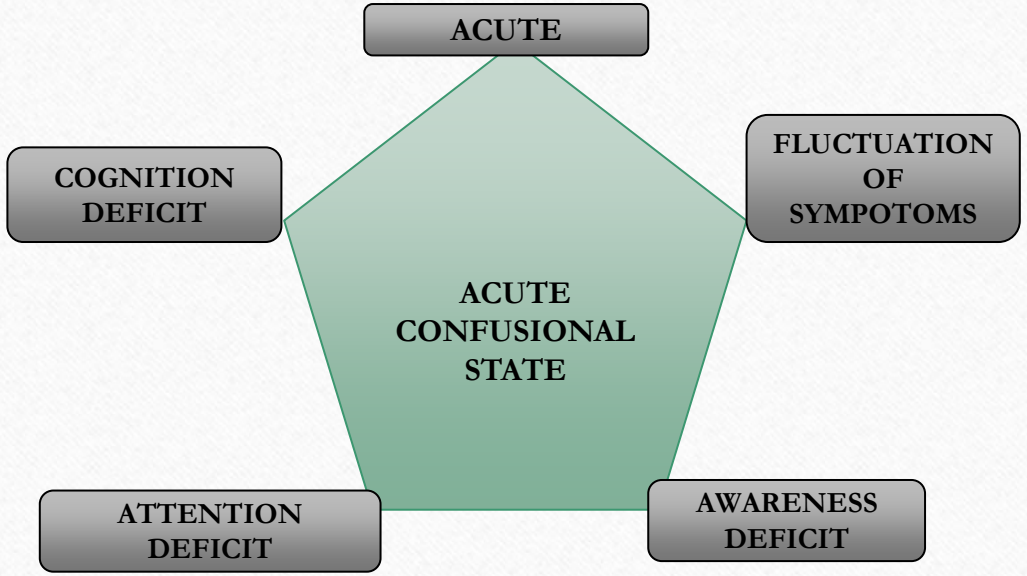
- **For patient with agitation, altered consciousness, disturbance in attention,cognition judgement and memory**
- **Like**
- Altered mental status,
- Acute mental change
- **Acute confusional state or delirium,**
- Acute brain failure,
- Psychiatric disorder

CLASSIFICATION

- **ALTERED MENTAL STATE**
- **Acute –Deliriun** or **Acute Confusional state**
- **Chronic** –Dementia
- **Encepalopathy**-(subacute organic brain syndrome)
- some what between delirium and dementia
- early course is fluctuating but later persistent and progressive

Acute Confusional State

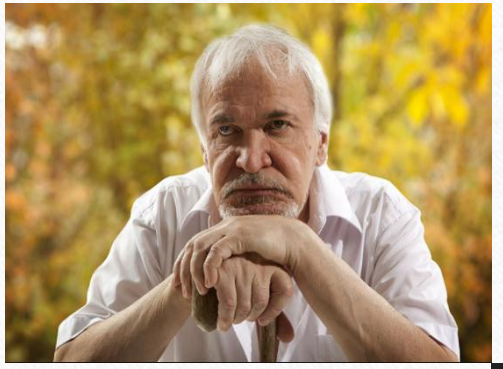
- difficult to define but associated with
- disturbance in consciousness,
- attention,
- thought,
- perception,
- awareness,
- memory
- psychomotor behavior.



Acute Confusional State

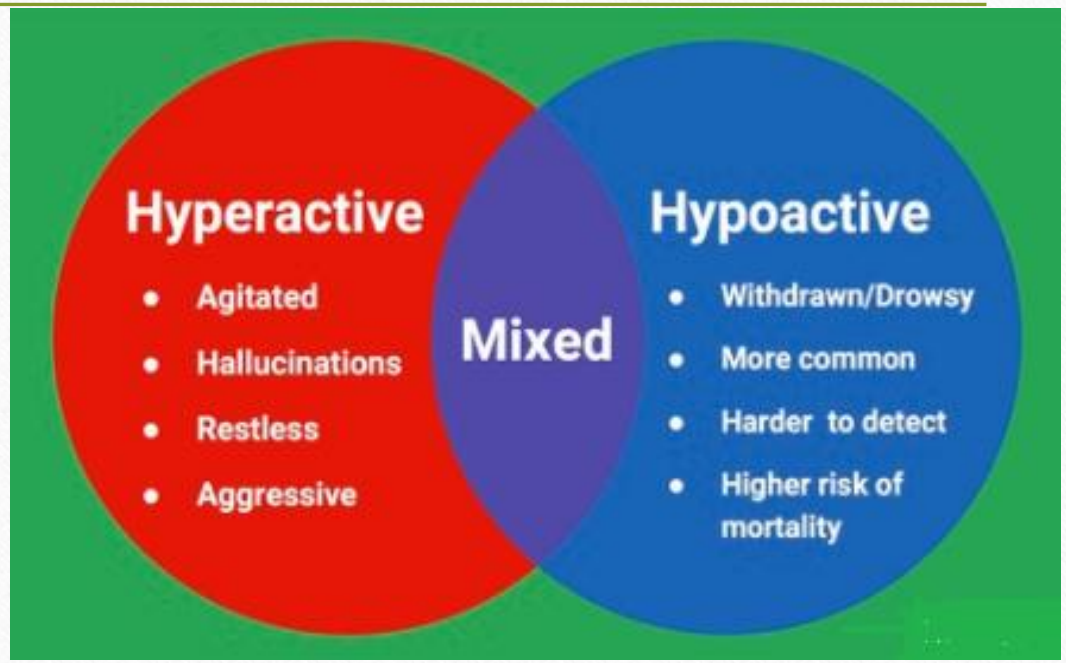
SYNONYMS: DELIRIUM

- Common and challenging presentation in ED
- Seen in all age group
- 5-10% of total emergency patient.
- 30% of elderly during hospitalization
- Elderly and with advanced comorbidities commonly affected
- High rates in ICU.
- Hospital mortality is 25-30%
- **Acute confusional state is a Medical Emergency**



ACUTE CONFUSIONAL STATE-can present

- In **hyperactive form** patient will be agitated restless anxious,
- In its **hypoactive form** patient present with lethargic condition
- while in **mixed variety** fluctuation of symptoms occurs.
- Patient with **hypoactive symptoms** like lethargy and elderly people are prone **for "missed diagnosis"** in emergency department.
- Morbidity and mortality are high, if this condition remain untreated or missed in emergency department.



Clinical Presentation

- Usually noticed by family members
- Develops rapidly over days-weeks times
- Acute onset with fluctuation of symptoms
- Clouding of consciousness, bizarre behavior, hyper alertness Agitation Confusion
- Deficit in attention and awareness and concentration
- Altered sleep pattern (day time sleeping)
- Disorientation for time and place, Short term memory deficit,
- Hallucination, Illusion, Asterixis
- Unsteady gait and tremors

Excited delirium syndrome

- Newly defined entity of hyperactive delirium, associated with metabolic derangement and high mortality
- Tachypnea,sweating,agitation,tactile hyperthermia, pain tolerance unusual strength ,noncompliance with police,
- Excited delirium syndrome is considered as medical emergency and associated with mortality rate around 10%
- Underlying etiology related to intoxication or underlying psychiatric illness with proposed mechanism of excess dopamine.
- Patient often present with multiple metabolic derangement, including dehydration,acidosis,rhabdomyolysis and hyperkalemia.
- Most death are due to arrhythmias
- Trauma also plays major role

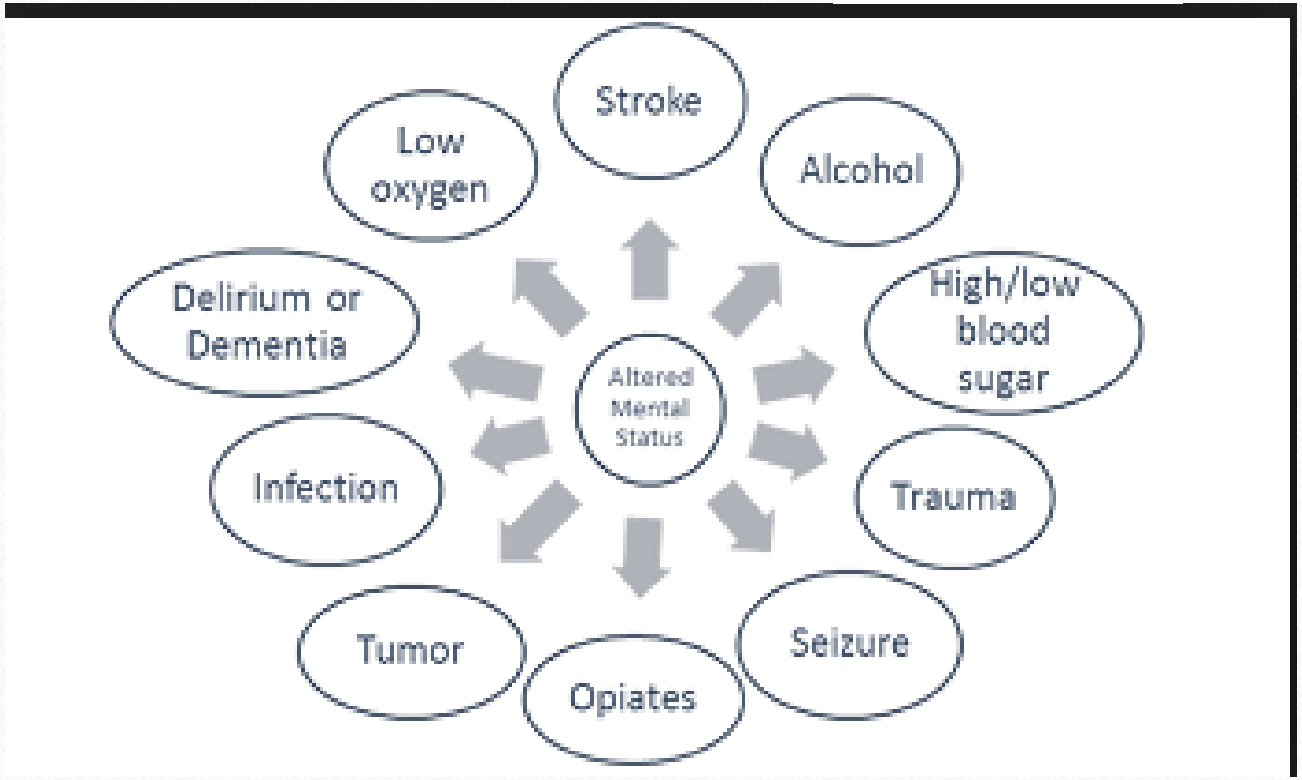
ETIOLOGY OF ACUTE CONFUSIONAL STATE

SYSTEMIC	*INFECTIONS including Urinary tract infection malaria pneumonia sepsis inadequate pain management trauma (head injury) dehydration hypothermia and hyperthermia*
METABOLIC	*Hypoxia hyponetremia hypoglycemia hyperglycemia renal, hepatic thyroid dysfunction thiamine B12 nicotine deficiency*
CENTRAL NERVOUS SYSTEM	*Stroke: ischemic/hemorrhagic subarachnoid hemorrhage subdual epidural hematoma meningitis encephalitis seizure and post ictal state migraine space occupying lesion brain tumour brain abscess*
CARDIORESPIRATORY SYSTEM	*Acute myocardial infarction heart failure cardiogenic shock respiratory failure*
MEDICATION	*Benzodiazepine morphine steroid antiepileptics antiparkinsonism anticholinergics*
TOXIC SUBSTANCE	*Alcohol intoxication or withdrawal Substance misuse or withdrawal Carbon monoxide poisoning*
OTHERS	*Post operative state urinary retention bladder catheterization,physical retrain*

Remember important causes

AEIOU-TIPPS

- **A**lcohol Abuse
- **E**pilepsy(seizure)
- **I**nsulin(diabetic emergency)
- **O**verdose Oxygen(hypoxia)
- **U**remia
- **T**rauma (head injury)
- **T**emperature (heat &cold related)
- **I**nfection
- **P**oisoning
- **P**sychiatric condition
- **S**troke Shock



Pathophysiology:

- **DIRECT BRAIN INSULT** BY THE **VARIOUS STRESSFUL FACTORS**
- **AFFECTS** THE **ENERGY SUPPLY ,AND HAVE DISRUPTIVE EFFECT ON BRAIN ARCHITECTURE AND PATHWAYS**.
- FURTHER **CELLULAR RESPOSE** TO SYSTEMIC INSULT IN THE FORM OF SYMPATHETIC SURGE & INFLAMMATORY CYTOKINES RESULTING **IN THE IMBALACE OF NEUROTRANSMITTERS**
- INCREASE IN DOPAMINERGIC TONE &DECREASE IN ACETYLECHOLINE IN CNS
- UNIQUE MIX OF NEUROTRANSMITTER DYSREGULATION IN IN DIFFERENT VARIETY OF DELIRIUM

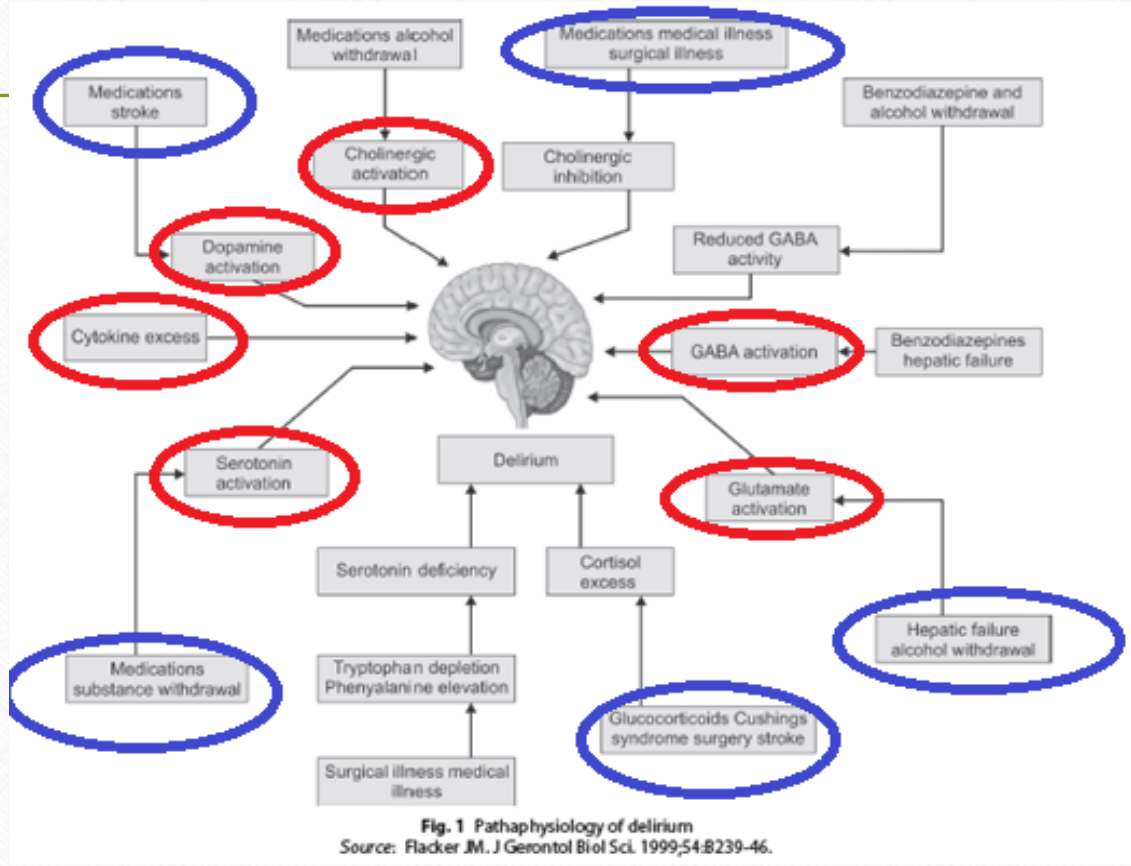


Fig. 1 Pathaphysiology of delirium
Source: Flacker JM. J Gerontol Biol Sci. 1999;54:B239-46.

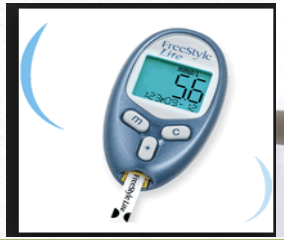
Approach to acute confusional state

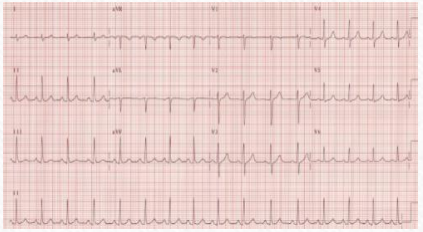
- ABC
- ESTABLISH BASE LINE
- IDENTIFY LIFE THREATNING CONDITIONS
- REVIEW MEDICATIONS/RISKY MEDICATIONS
- BEDSIDE EVALUATION
- DIFFERENTIAL DIAGNOSIS
- APPROPRIATE TESTING
- MANAGEMENT

Immediate Steps by ED physician

- **Personal & team safety first**
- Monitoring device to record vital signs
- **A**irway **B**reathing and **C**irculation to be assessed & managed
- **Intravenous fluid** can be started if poisoning is suspected for circulatory support.
- **Abnormal vital signs in non-agitated patient is a dangerous sign** and indicates systemic illness. Use the **point of care testing** to identify the life-threatening cause immediately like

Random blood **sugar,** blood **gases** and **ECG**

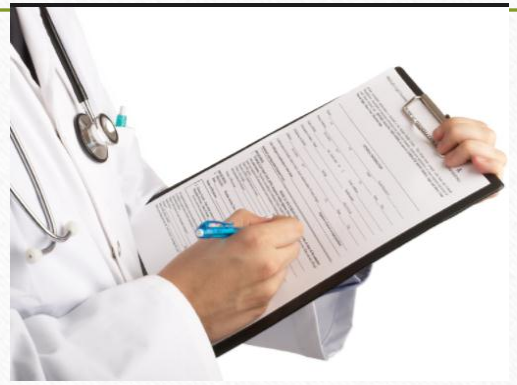




Life threatening causes: Immediate Interventions

- **Identify the life threatening causes of acute confusional state.**
- **As most of the causes are reversible if identify and treated urgently**
- one should not be confused with the presence of history of psychiatric illness because **many medical conditions exacerbate the underlying psychiatric illness** and make the situation more complex and here effective management depends on the high index of suspicion

- **Hypoxia ,Respiratory disorder**
- **Hypoglycemia, hypo/hyperthermia**
- **Stroke**
- **Cardiac arrhythmia**
- **Alcohol intoxication**
- **Infections Meningitis/Encephalitis**
- **Status epilepticus**
- **Poisoning**
- **Traumatic head injury**

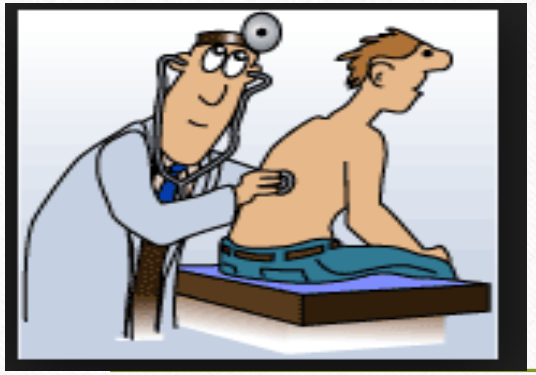


History Taking in ED

- History Taking in these patients are **difficult** as patient are often **confused and disoriented**.
- Obtain the information through **previous medical records** family members and friends.
- In most of the patient history alone give the diagnostic clues.
- History of **fever, headache, suicidal tendency**, **fall** or **trauma**, **alcohol use** or any substance abuse should be recorded.
- Preexisting **endocrine disorder**, **exposure to toxins or environmental injuries** psychiatric illness
- **Elderly are more vulnerable** so emphasis should be given on their **medication chart** and **recent changes in medication doses.**

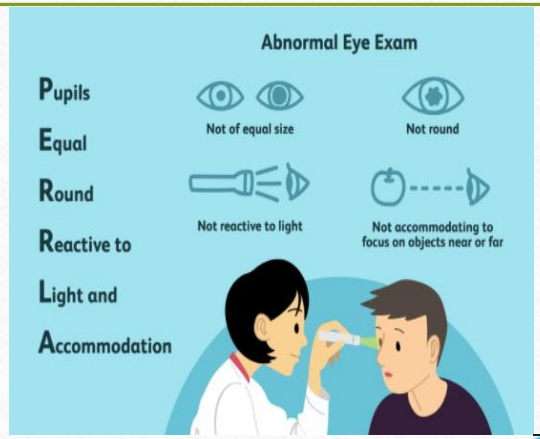
IDENTIFY RISK FACTORS on the basis of history

- Multiple Advance form of comorbidities in elderly
- Poor mobility terminally ill
- Socially neglected Stressful people, visual or hearing problem
- Previous episode of delirium, advance dementia
- Multiple medications and dependence like benzodiazepine
- Chronic disease: CKD End stage liver disease
- Conditions like burn hypo albuminemia dehydration malnutrition infection AIDS
- Alcohol abuse or withdrawal
- Prolong intensive care unit admission



Examination

- Patient should be evaluated for **pupil,fundus** and extraocular abnormalities,nuchal rigidity, thyroid enlargement,
- **Cardiovascular** examination for heart murmurs or rhythm abnormalities
- **Pulmonary examination** for wheezing rales or absent breath sound
- **Abdominal examination** for hepatic or splenic enlargement
- **Neurological examination** should focus on focal or lateralizing symptoms cranial nerves and examination of cerebellar signs.
- **Cutanious examination** for rases,icterus petechie ecchymosis cellulitis



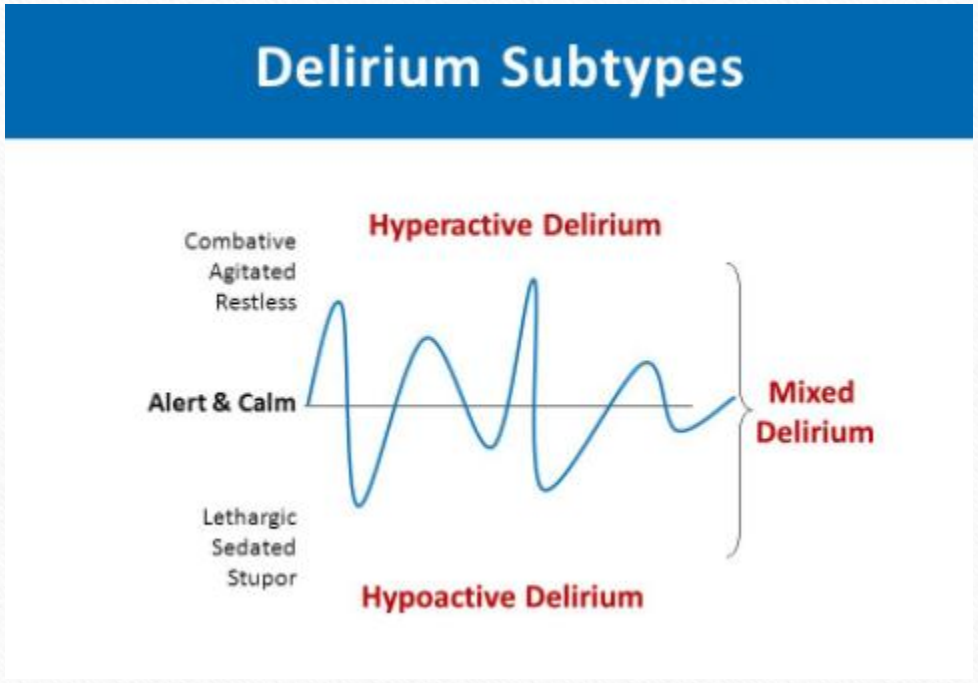
MEDICATION HISTORY

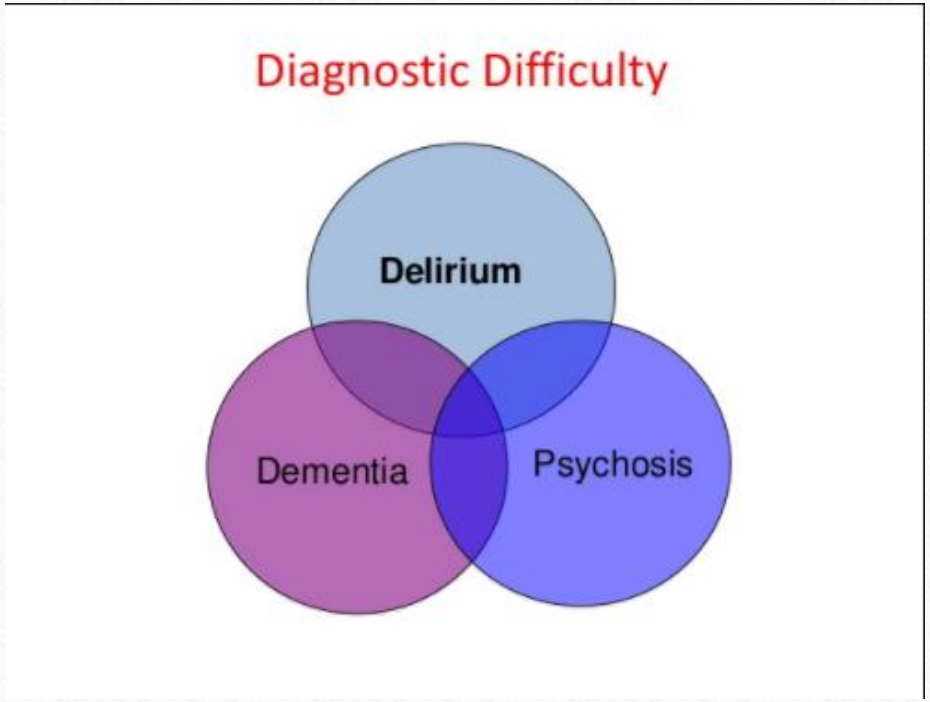
- Generally **elderly population** with comorbidities are on **multiple drugs** so while evaluating the delirium in emergency department it's mandatory to **check the medication list** regarding **recent addition of any culprit medication or dose modification** that causes delirium like **benzodiazepines, opiates, antidepressant, muscle relaxant, anticholinergic and sympathomimetic.**

Check the Risky medication..

MEDICATIONS/TOXIDOMES AND THEIR SYSTEMIC EFFECTS		
Drugs	*Effect*	*Clinical features*
Alcohol Benzodiazepines	*CNS depression*	*Decrease motor activity hypotension*
Alcohol Benzodiazepines withdrawal	*Agitation excitation hallucination*	*Sweating tachycardia mydriasis*
opiates	*sedation*	*Hyperventilation miosis*
Opiates withdrawal	*Anxiety*	*Nausea vomiting tachycardia*
Cholinergic	*CNS depression*	*salivation, lacrimation, urination, bradycardia, miosis are muscarinic effects* *hypertension, tachycardia, fasciculations are nicotinic effects*
Anticholinergics	*Agitation and coma*	*Tachycardia, flushed and dry skin, dry mucus membranes, hyperthermia, decreased bowel sounds, urinary retention, mydriasis*
Sympathomimetics	*Agitation, seizures, coma*	*Hypertension, tachycardia, hyperthermia, diaphoresis, hyperpnea, mydriasis*

Differentiate delirium subtype





Delirium Vs Dementia

Altered Mental Status

Differentiation of delirium and dementia

Clinical feature	Delirium	Dementia
Onset	Acute	Chronic
Course	Fluctuating	Stable
Level of consciousness	Decreased or agitated	Normal
Attention	Abnormal	Normal
Orientation	Impaired	May be impaired
Hallucinations	Visual/auditory	Absent

Acute Confusional State Vs Other Psychiatric Illness

Features	*Acute confusional state*	*Other psychiatric illness*
onset	*Acute*	*Sub acute/chronic*
course	*fluctuating*	*Progressive/chronic*
duration	*Hours to week*	*Month to years*
Vitals	*abnormal*	*normal*
Attention	*abnormal*	*normal*
Orientation	*abnormal*	*normal*
Awareness	*abnormal*	*normal*
Reversibility	*In most of cases*	*Usually not*

DELIRIUM ASSESSMENT TOOLS

- There are **several tools** are available for assessment of confusion in emergency department.
- **MMSE** mini mental status examination and the 6 item screener of orientation,registration,attention,calculation,recall, language and praxis.
- **AVPU** simplest scale which stands for alertness, response to verbal and painful stimuli and unresponsiveness. There is no assessement of "response to painful stimuli" **so limited usefulness** this scale
- **GLASGOW COMA SACLE** described 40 years ago and most familiar among physicians
- **Richmond Agitation and Sedation Scale (RASS)**
- **Quick Confusion Scale**
- **Predominant screening tool described in emergency medicine is confusion assessment method(CAM)**

CONFUSION ASSESSMENT METHOD (CAM)

- first described by **Inouye and colleagues** in 1990 based on the *Diagnostic & Statistical Manual of Mental Disorders Revised 3rd edition* (DSMIIIR) criteria, helpful for non psychiatric trained physician to diagnose delirium quickly and accurately.
- **CAM consists of 4 components**
- **1 Acute onset mental status changes fluctuating course**
- **2 Inattention**
- **3 Disorganized thinking and**
- **4 Altered level of consciousness.**
- **First 2 component are mandatory** and either of 2 from rest of two necessary for diagnosis of delirium

DIFFERENTIAL DIAGNOSIS
"I WATCH DEATH"

- **I**nfections
- **W**ithdrawal
- **A**cute Metabolic
- **T**rauma
- **C**NS Ds
- **H**ypoxia/**H**ypercarbia
- **D**eficiencies (Thiamine B12)
- **E**ndocrine/Environmental
- **A**cute Vascular
- **T**oxins/Drugs
- **H**eavy metals

LABORATORY AND RADIOLOGY-1

Laboratory and radiology investigations	Clue about causes of acute confusional state/delirium
Complete hemogram	Acute Anemia,(hemorrhage) Leucopenia,leucocytosis,(infection) thrombocytosis, thrombocytopenia
Kidney functions and electrolytes	Hyponetremia hypoglycemia, hyperglycemia, Acute kidney injury, uremia
Liver functions test ammonia levels lipase	Jaundice Hepatic failure hepatic encephalopathy pancreatitis
Thyroid function test	Myxedema or thyroid storm
Arterial blood gases	Hypoxia hypercarbia metabolic acidosis
ECG	myocardial infarction arrhythmias, drug toxicity
cardiac enzyme	Myocardial infarction
Chest X-ray	Pneumonia pulmonary edema heart failure
CT abdomen	Appendicitis pancreatitis obstructive uropathy
Non-contrast CT Head	Stoke mass lesion
Lumber puncture and CSF exam	Meningitis encephalitis

LABORATORY AND RADIOLOGY-2

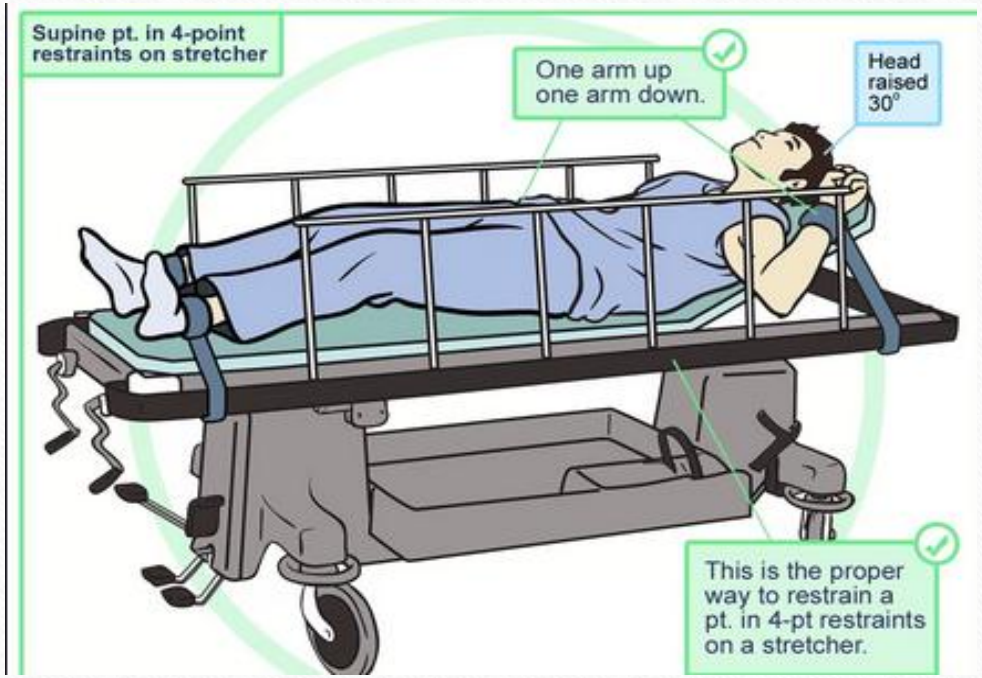
- **CT head are not indicated in all cases** of acute confusional states but more **helpful in elderly group of patients, and or on anticoagulation, history of trauma immunocompromised patient,** non contrast CT head is usually sufficient
- **Lumbar puncture and CSF exam** should be considered in patient with fever and confusion
- **Urine drug screen** should be used cautiously due to false positive and negative results.
-

MEDICAL MANAGEMENT

- Withdraw or reduce the drug causing confusion or delirium
- Correct electrolyte abnormalities
- Antibiotic to treat the infection
- Pain management adequate pain management reduce the agitation

MANAGEMENT OF AGITATION IN ED-1

- **Physical** or chemical restrain of patient are required whenever there is possibility of **"self harm"** and agitated behavior **dangerous to hospital staff.**
- Close observation of patient is required to record changes in tone speech irritability clinched jaw and fist for intervention at the right time.
- Physician must record the GCS before applying any measures for agitation control



MANAGEMENT OF AGITATION IN ED-2

- **Typical antipsychotic agent :**
- *Haloperidol and Droperidol* are commonly used as first line medication for delirium.
- *Haloperidol* given in 2.5 mg to 10 mg oral IM IV intramuscular.
- **Atypical antipsychotics:** are *Olanzapine and Ziprasidone*
- Olanzapine: 5-10 mg IM ,Ziprasidone 10-20 mg IM
- **Benzodiazepine:** *Midazolam & Lorazepam*
- Midazolam 2.5-5 mg IM IV and Lorazepam 0.5-2 mg IM IV
- **Quetiapine** 12.5-25 mg orally twice daily for hypoactive form of delirium.

	HALOPERODOL	LORAZEPAM
QUALITIES	High potency antipsychotic Less sedative and less chances of exacerbation of delirium	Short acting
DOSE	Mild/moderate cases 0.5-2mg orally BD/TDS Severe cases 2-5 mg IM every 8 hours	0.5-2mg orally/IM/IV every 2-4 hour
PRECAUTION	Monitor for extrapyramidal symptoms hypotension rise in temperature CNS depression	Can cause hypoxic cardiac arrest use cautiously in elderly severely ill and patient with low pulmonary reserve myasthenia gravis
CONTRINDICATION	Severe depression comatose hypersensitivity Parkinson's disease	Hypotension, sleep apnea, severe respiratory insufficiency CNS depression
INTERACTIONS	Raises tricyclic antidepressant concentration and hypotensive action of antihypertensive drugs	Raises toxicity when used with alcohol phenothiazine barbiturates

SUPPORTIVE MANAGEMENT-1

Supportive measures reduces the need of antipsychotics and benzodiazepines drugs.

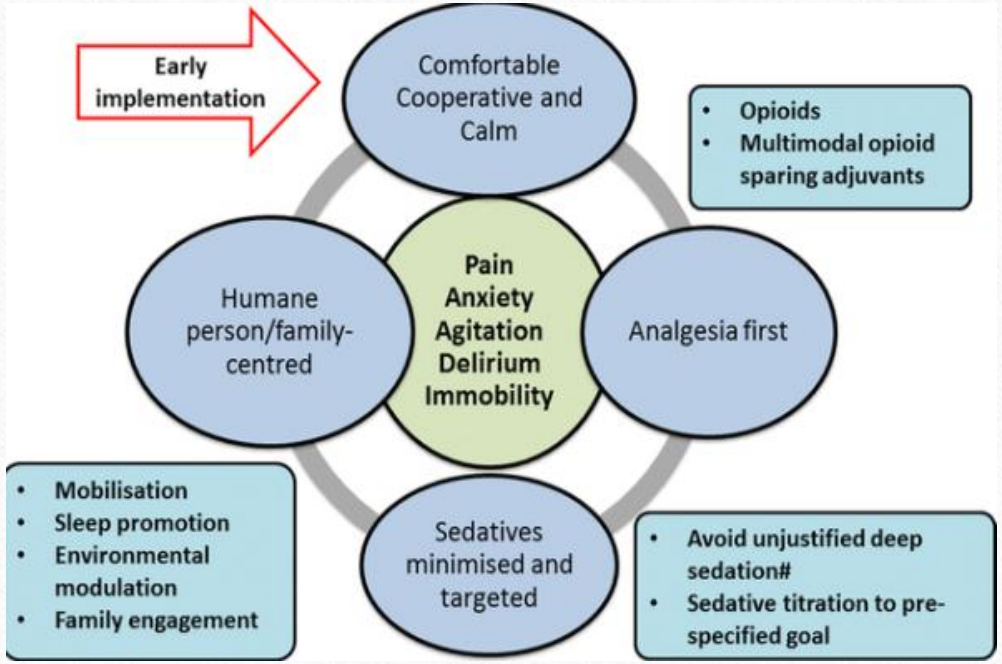
- **Team** of doctors nurse social worker managers are required.
- **Handle gently**
- **Avoid long stay** of patient in emergency department
- **Monitoring device** that may irritate the patient should be **avoided** vitals can be checked intermittently
- **IV fluid can also be given intermittently** as bolus instead of continuous infusion
- **False alarm** of monitoring devices can also irritate and disorient the patient

SUPPORTIVE MANAGEMENT-2

- **Physical restrain also increases agitation** and delirium, use only for brief period if necessary
- Adequate **lighting** of surroundings
- **Presence of family members close friends**
- Placing **white board/clock/calendar in room** displaying date time for orientation
- **Increase mobilization** by avoiding physical restrain
- **Minimize sleep disruption provide calm environment**

SUPPORTIVE MANAGEMENT-3

- **Urinary catheters** also increases agitation and risk of infection and increase length of hospitalization, there is always risk of traumatic self-removal of catheters
- **Avoid frequent ward transfers** and multispecialty complexity
- Provide **glasses and hearing aids** if necessary
- **Avoid sedation** if possible they increase confusion and risk of falls



EFFECTS OF ACUTE CONFUSIONAL STATES

- According to various studies
- Acute confusional states is **marker of severity of illness** and multiple comorbidities
- Associated with **in hospital** and **long-term mortality.**
- Acute confusional state **adversely affect the patient quality of life.**
- These patients **are more prone** to develop hospital acquired infections, pressure sore, malnutrition, fractures and repeated hospitalization.

DISPOSITION

- Most of the patient of acute confusional state **need hospitalization** once they are identified in emergency department.
- **A very few patient can be discharged if closed supervision and monitoring can be arranged at home** but frequent hospitalization are reported in these patients.

Concern

- If acute confusional state specially hypoactive form **missed in ED**
- due to its subclinical nature of the disease or due to work load
- raises serious issue related to quality of the care

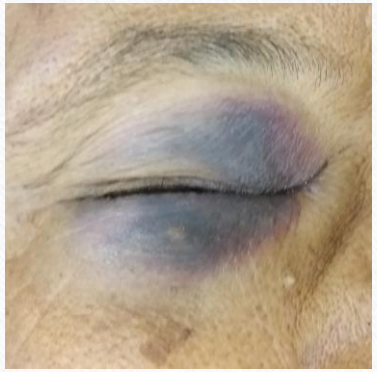
CASE SUMMARY-1

- 29 years young male
- Brought to Emergency department at around 1:50 am midnight after road traffic accident on National Hhighway
- **In a Acute Confusional State & Agitated**

Initial Clinical Parameters

- **Airway patent**
- **Pulse 86/min**
- **BP 138/96 mm of Hg**
- **Respiratory Rate 18/min**
- **Saturation 100% on room air**
- **Blood Sugar 86mg/dl**
- **GCS 13/15**
- **In a Acute Confusional State & Agitated**

- Local Examination
- **Facial swelling on right side**
- **Right black eye,**
- **Periorbital** Echymosis,
- **Tenderness** on Zygoma
- Small **laceration** on eye brow nose
- abrasion on **right forearm**



LAB & RADIOLOGY

Lab Investigations

Hb 16.8

TLC 12000

Platelets 3.65 L

LFT normal

Urea 21 creatinine 0.90

Na 141 K 4

Results of CT scans

- NCCT brain, cervical spine **NORMAL**
- No abnormalities detected in **CECT thorax abdomen**
- **CT Face 3D reconstruction :**
- **multiple facial bone fractures are noted**

Alcohol Intoxication

Patient ID	: MM01080390	**Sex:**	MALE
NRIC/Alt.IdNo:		**Nationality:**	India
Location	: Emergency and Trauma Services		
Doctor	: Emergency Team	**Ordered**	: 07/07/2017
Specimen Numb:	1017340986	**Collected**	: 07/07/2017
Specimen Type:	Serum	**Received**	: 07/07/2017
Category Numb:	/ /	**Registered:**	07/07/2017
Clinical	:		
Comment			

INVESTIGATION	RESULT	UNITS	BIOLOGICAL REFERENCE INT
Alcohol	195	mg/dl	

Kindly Correlate Clinically
Negative < 10
Toxic 50-100
Depression of CNS > 100
Fatalities reported > 400

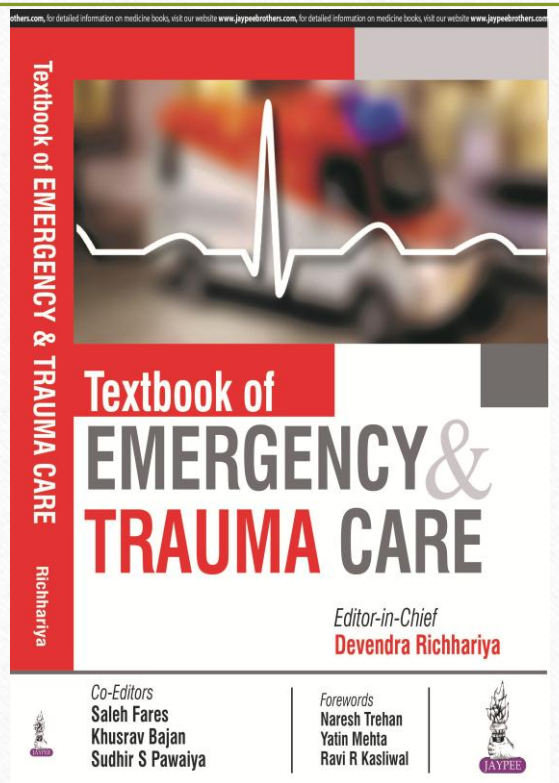
CASE SUMMARY-2

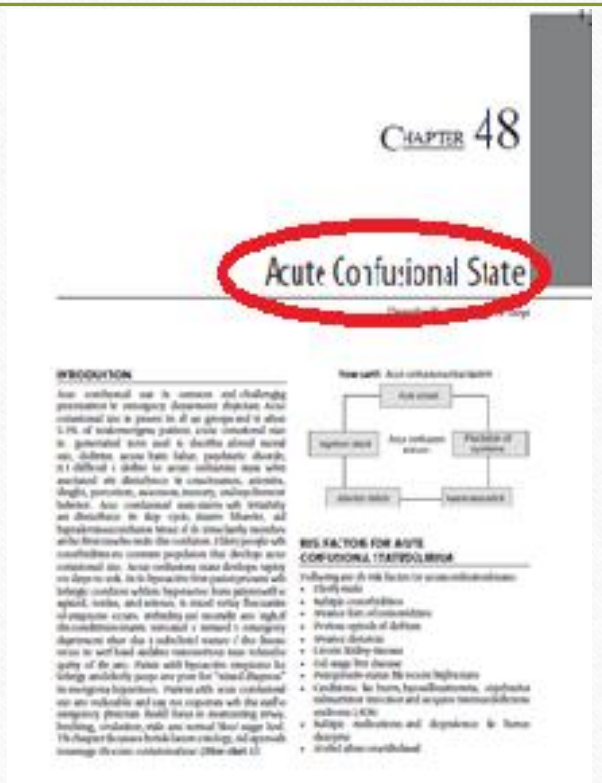
- A 68-year old woman brought to the ED by paramedics
- **bizarre behaviour altered sensorium with drowsiness.**
- She doesn’t have any previous psychiatric admissions.
- She was on **diuretics for hypertension**.
- LAB revealed **Hyponatremia, of 118.**
- Patient **responded to Sodium supplementation discharged home** in stable condition after modification of antihypertensive medication

SUMMARY
Acute Confusional State

- Common in emergency department especially in elderly with comorbid conditions.
- Poor outcome and high mortality If missed diagnosis or delay in management.
- Physical & Diagnostic evaluation to confirm diagnosis
- Treatment of underlying cause
- Apply supportive and non pharmacological measures
- Haloperidol for hyperactive delirium and control agitation,
- Quetiapine for hypoactive delirium
- In view of high morbidity mortality, patient should be admitted and managed aggressively

References-Text book of Emergency & Trauma care By Editor in Chief *Devendra Richhariya*



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