NEWER UNDERSTANDING OF DELIRIUM

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WHAT WE KNOW ABOUT DELIRIUM

- MEDICAL& PSYCHIATRIC EMERGENCY- signs & symptoms
- SUBTYPES: HYPERCTIVE, HYPOACTIVE, MIXED.
- 4 CAUSAL DOMAINS- medical, Subs. intox/ withdrawal, Toxins, Multiple etiologies.
- NEUROPHYSIOLOGY- DA,ACH,GABA, glutamate.
- PREDISPOSING FACTORS
- ANTIPSYCHOTICS & BENZD – Mainstay of Treatment

FACTORS THAT PREDISPOSE PATIENTS TO DELIRIUM

Vision impairment	**Hypertension**	**Use of bladder catheter**
Medical illnesses (severe)	COPD	Preoperative **cognitive impairment**
Cognitive impairment	**Alcohol abuse**	Functional limitations
> 70 years of age	Smoking history	H/O delirium
Any iatrogenic event	**Abn. sodium level**	Abn. K+, NA+ or glucose
Use of physical restraints	**Abn. glucose level**	Preoperative use of **benzd**.
Malnutrition	Abn. bilirubin level	Preoperative use of **narcotic analgesics**
> 3 medications added	BUN to creat. ratio >18	Epidural use

DIAGNOSTIC CRITERIA

ICD 10	DSM 4 TR
CONSCIOUSNESS + ATTN.	CONSCIOUSNESS + ATTN.
DISTB. OF COGNITION.	DISTB. OF COGNITION
Psychomotor Activity	-
S-W CYCLE	-
EMOTIONAL DISTB.	-
RAPID& FLUCTUATING COURSE	RAPID & FLUCTUATING COURSE
EVIDENCE OF CEREBRAL DYSFUNCTION	CEREBRAL DYSFUNCTION

CONCEPT

DSM-5	DSM-IV TR
A. A **DISTURBANCE IN ATTENTION** (i.e., reduced ability to direct, focus, sustain, and shift attention) **and AWARENESS** (reduced orientation to the environment).	A. **DISTURBANCE OF CONSCIOUSNESS** (i.e., reduced clarity of awareness of the environment) with reduced ability to focus, sustain or shift attention.
B. The disturbance develops over a short period of time (usually hours to a few days), **represents a change from baseline attention and awareness,** and tends to fluctuate in severity during the course of a day.	B. The disturbance develops over a short period of time (usually hours to days) and tends to fluctuate during the course of the day
C. An additional **disturbance in cognition (e.g. memory deficit, disorientation, language, visuospatial ability, or perception).**	C. A **change in cognition** or the development of a perceptual disturbance that is not better accounted for by a pre-existing, established or evolving **dementia**.(for being labelled as delirium)
D. The disturbances in Criteria A and C are not better explained by a pre-existing, established or evolving **NEUROCOGNITIVE DISORDER** and do not occur in the context of a severely reduced level of arousal, **such as coma.**	
E. There is evidence from the history, physical examination or laboratory findings that the disturbance is a direct physiological consequence of **ANOTHER MEDICAL CONDITION, SUBSTANCE INTOXICATION OR WITHDRAWAL, OR EXPOSURE TO A TOXIN, OR IS DUE TO MULTIPLE ETIOLOGIES.**	D. There is evidence from the history, physical examination or laboratory findings that the disturbance is caused by the direct physiological consequences of a **general medical condition**.

CONTD..

- **<u>MELATONIN DEFICIENCY- underlying cause for delirium</u>**
- Circadian rhythms, melatonin concentrations in alcohol withdrawal. (Mukai.M et al.).
- The Relation Between the Clinical Subtypes of Delirium and the Urinary Level of 6-SMT (silivu Balan et al.)
- Postoperative delirium and melatonin levels in elderly patients. (Shiegeta.H et al)

- **<u>NEURAL CIRCUITS INVOLVED DELIRIUM-</u>** final common pathway

-Prefrontal cortex, anterior and right thalamus, right basilar medial temporo parietal cortex may play a significant role in delirium symptoms.

-May be responsible for certain 'core symptoms' (disorientation, cognitive deficits, sleep-wake cycle disturbance, disorganized thinking, and language abnormalities).

Ref-Trzepacz P, T, Update on the Neuropathogenesis of Delirium. Dement Geriatr Cogn Disord 1999;10:330-334

DIFFERENTIAL FEATURES OF DELIRIUM, DEMENTIA AND PSYCHOSIS

Characteristics	Delirium	Dementia
Onset	Sudden	Insidious
Course over 24hr`s.	Fluctuating with nocturnal exacerbations	Stable
Consciousness &Attention	Reduced	Clear& Normal
Cognition	disordered	impaired
Hallucinations	visual and auditory	Often absent
Delusions	Fleeting, poorly systematized	Often absent

ASSESMENT& EVALUATION

SCALES FOR DELIRIUM:

Developed based on DSM criteria

DIAGNOSIS & SCREENING-

DRS-R-98, CAM, MDAS.

SEVERITY ASSESSMENT-

DRS, DRS-R-98, MDAS, DAS.

ICU-

CAM-ICU

MANAGEMENT

- INVESTIGATIONS- SR.Electrolytes, Imaging- CT, MRI, EEG and Other- ECG, ABG.

- **NONPHARMACOLOGICAL-**
- ENVIRONMENTAL –remove exacerbating factors, provide familiarity, optimal level of env.stimulation.
- SUPPORTIVE : Re orientation, reassurance, educating family members.

- **PHARMACOLOGICAL** —NEWER MEDICATIONS ARE BEING STUDIED

ANTIPSYCHOTICS

- **TYPICALS:HALOPERIDOL**: oral, IV and IM

ADVANTAGES:

Lower anti cholinergic activity, Lower sedation, short acting.

MONITOR- ECG, QT prolongation (interval > 450msec)

- **ATYPICALS-** Resperidon, Quitiapine, Olanzapine, IV.ziprasidone.

ADVANTAGES- different side effect profile than haloperidol.

SEDATIVES

BENZODIAZEPINES: Diazepam, lorazepam

Generally not used 1st line. (non alcoholic delirium patients)

Used as the treatment for alcohol withdrawal delirium tremens.

DISADVANTAGES:

Risk of falls

Respiratory depression

Cognitive side effects

UNCOMPETITIVE NMDA ANTAGONISTS

- AMANTIDINE AND MEMANTINE :

NMDA receptor antagonists.

Reduce the excitatory glutamate neurotransmission.

ANTICONVULSANTS

- VALPROIC ACID:

Agitated delirious patients who fail to respond to conventional medication.

Monitor LFTS, bilirubin, platelet count, amylase.

- GABAPENTIN:

Alternative to opioids for the treatment of postoperative pain and reduces the development of pain.

ACETYLCHOLINESTERASE INHIBITORS

- PHYSOSTIGMINE:

FDA approved indication for anti cholinergic induced delirium

contra indication -

QRS interval > 100msec not related to bundle branch block.

PR interval > 200 msec.

MELATONIN AND RELATED MEDICATIONS

- Disturbances in circadian rhythm, melatonin release cause delirium.
- Low dose melatonin or ramelteon (melatonin agonist) used for post op delirium, in pts who are unresponsive to antipsychotics and BZD.

OTHER MEDICATIONS

- ONDANSETRON – 5HT3 antagonist, used to prevent post operative delirium (bayindir et al).

- STATINS – has anti thrombotic, anti inflammatory, immunomodulatory properties.

used to prevent Post operative delirium prevention strategy for elderly patients.

REFERENCES

- COMPREHENSIVE TEXTBOOK OF PSYCHIATRY- 8TH edition.
- OXFORD TEXTBOOK OF PSYCHIATRY.
- GABBARDS TREATMENT OF PSYCHIATRIC DISORDERS -5TH edition.
- APA guidelines.

THANK YOU

NERUPATHOPHYSIOLOGY

- Prefrontal cortex, right cerebral hemisphere (esp parietal), and subcortical nuclei (esp. right sided thalamus & caudate) are implicated.