Finding the Furrow
Dearbhail Lewis
Consultant Psychiatrist
Belfast Health and Social Care Trust
Referral - Mr B

• 67 year old man
• Auditory hallucinations, persecutory ideation
• Recent discharge AMU
  • Agitation and confusion
  • Treated for UTI/hyponatraemia
• Possible history of schizophrenia
Further information

• GP commenced **Quietapine**
  • 2/7 prior to admission
  • Dysuria, increased frequency

• Day prior to referral
  • Increased confusion
  • Verbal aggression
  • Referring to political party, being held prisoner
  • Worsening AKI
Background

• Nursing home resident (June 2018)
• Past medical history
  • HTN
  • Type 2 DM
  • Alcohol dependence syndrome
  • Hyponatraemia
  • Fractured acetabulum
  • CAP
• Medications
  • Thiamine, Amitriptyline
  • Atorvastatin, Amlodipine, Lisinopril, Tamsulosin, Doxazosin, Lantus
Past Psychiatric History

- Delirium March 2018, June 14
- Alcohol excess
- Alcoholic hallucinosis
  - Treated with Chlorpromazine (Nov 16)

- Previously treated with Duloxetine
  - Intermittently from Sep 2010
Psychiatric admission

- Detained admission 23/3/18
- Delusional beliefs
- Diagnosed with UTI
  - Treated with Fosfomycin
- Given alcohol free beer
- Settled, then began responding
- Further UTI
  - Trimethoprim
- Wanted to leave CTMA, no grounds to detain (9/4/18)
MSA in AMU

- In bed
- Good rapport, though agitated
- Speech dysarthric
- Mood subj good, obj agitated
- Persecutory beliefs
- No response to perceptual abnormalities
- 4AT 9 (Alert 4, Acute 4 Attention 0, AMT4 1)
- Insight limited
Diagnosis?

Delirium
What is Delirium?

• Neuropsychiatric syndrome
• Global cognitive dysfunction
• Acute onset
• Fluctuating course
• Physical aetiology
What’s in a name?

- ‘Acute confusional state’
- ‘Post-op confusion’
- ‘ICU psychosis’
- ‘Septic encephalopathy’
- ‘Transient global amnesia’
How common is delirium?

• VERY
• Acute hospital
  • 14-24% prevalence
  • 6-56% incidence
• Elderly up to 50%
• Under recognised
Identifying risk factors for delirium

• Age > 65
• Previous cognitive impairment
• Current hip fracture
• Systemic illness
Identifying risk factors for delirium

- Multiple medications
- Sensory impairment
- Dehydration
- Depression
- Chronic physical illness
- Substance use
- Neurological impairment
- Functional disability
Precipitants of Delirium
(‘My name is Legion, for we are many’)

- Severe acute illness
- Infection
- Changes to electrolyte balance
- Changes to acid/base balance
- Alterations in oxygenation
- Heart/renal/liver failure
- Hypoglycaemia
- Post ictal state/epilepsy
- Surgery (especially cardiac/orthopaedic)/other invasive procedures
- Acute fracture
- Introduction of ≥3 medications
- Immobility
- Use of restraints
- Use of urinary catheters
- Constipation
- Alcohol/BDZ withdrawal
- Major trauma
- Malnutrition
- Pain
- Stroke
- Head injury
- Encephalitis
- SOL
- Burns

Not solely UTI!
Precipitating Medications

- Antidepressants, Li+, Antipsychotics, Anticonvulsants
- Steroids
- L-dopa
- **Sedatives**
- Antibiotics
- Digoxin, diuretics
- Chemotherapy
- Diuretics
- NSAIDs, OTC medication
the Usual Suspects
Volume 1
Common Drugs Associated with Delirium

The Blues Brothers featuring Antidepressants
Sleepy Hollow featuring Benzodiazepines
Inside Out featuring Antiemetics
7 Year Itch featuring Antihistamines

A River Runs Through it featuring Incontinence Agents

Illustration from Delirium Care Network
Precipitating Drugs

• Drug Intoxication
  • Prescribed medication
  • LSD
  • Alcohol
  • Amphetamines
  • Cannabis
  • Cocaine
  • Inhalants/solvents

• Poisons
Clinical Features – DSM V

• Disturbance in attention and awareness
• Short period, fluctuations
• Additional disturbance in cognition
• Disturbances not better explained by a pre-existing neurocognitive disorder
• Physiological consequence of general medical condition or substance
Clinical features – ICD 10

- Clouding of consciousness
- Disturbance in cognition
- Psychomotor disturbance
- Disturbance of sleep/sleep-wake cycle
- Rapid onset, fluctuations
- Underlying cerebral/systemic disease
  - Emotional disturbance
  - Hallucinations
  - Illusions
  - Transient delusions
3 subtypes

• Hyperactive
  • Restless, increased motor activity
  • Wandering

• Hypoactive
  • Decreased activity
  • Decreased speech
  • Reduced awareness of environment
  • Listless
  • Higher rates complications & morbidity
    (Robinson et al 2011, Kim et al 2015)

• Mixed
  • Both subtypes in 24 hour period
### 4AT: screening instrument for cognitive impairment and delirium

<table>
<thead>
<tr>
<th>Patient name:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of birth:</td>
<td>Time:</td>
</tr>
<tr>
<td>Patient number:</td>
<td>Tester</td>
</tr>
</tbody>
</table>

#### [1] ALERTNESS

This includes patients who may be markedly drowsy (eg. difficult to rouse and/or obviously sleepy during assessment) or agitated/hyperactive. Observe the patient. If asleep, attempt to wake with speech or gentle touch on shoulder. Ask the patient to state their name and address to assist rating.

- Normal (fully alert, but not agitated, throughout assessment)  0
- Mild sleepiness for <10 seconds after waking, then normal  0
- Clearly abnormal  4

#### [2] AMT4

Age, date of birth, place (name of the hospital or building), current year.

- No mistakes  0
- 1 mistake  1
- 2 or more mistakes/untestable  2

#### [3] ATTENTION

Ask the patient: “Please tell me the months of the year in backwards order, starting at December.” To assist initial understanding one prompt of “what is the month before December?” is permitted.

- Months of the year backwards Achieves 7 months or more correctly  0
- Starts, but scores <7months/refuses to start  1
- Untestable (cannot start because unwell, drowsy, inattentive)  2

#### [4] ACUTE CHANGE OR FLUCTUATING COURSE

Evidence of significant change or fluctuation in: alertness, cognition, other mental function (eg. paranoia, hallucinations) arising over the last 2 weeks and still evident in last 24hrs

- No  0
- Yes  4

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Prof Alasdair MacLullich (Edinburgh Delirium Research Group, University of Edinburgh, Scotland), Dr Tracy Ryan and Dr Helen Cash (NHS Lothian, Scotland)
Other screening tools are available...

- CAM/CAM-ICU
- Observation Scale of Level of Arousal
- Richmond Agitation and Sedation Scale
- SAVEAHAART

- Delirium Screening in Older Patients Pendlebury at al 2018
# Differentiating Delirium from Dementia

<table>
<thead>
<tr>
<th>Delirium</th>
<th>Dementia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute onset</td>
<td>Slow, gradual onset</td>
</tr>
<tr>
<td>Identifiable time of onset</td>
<td>Time of onset unclear</td>
</tr>
<tr>
<td>Cause usually treatable</td>
<td>Due to chronic disorder</td>
</tr>
<tr>
<td>Usually reversible</td>
<td>Progressive process</td>
</tr>
<tr>
<td>Attention impaired</td>
<td>Attention not impaired until late stages</td>
</tr>
<tr>
<td>Consciousness ranges from lethargic to hyperalert</td>
<td>No effect on consciousness until late stages</td>
</tr>
<tr>
<td>Effect on memory varies</td>
<td>Loss of memory, especially for recent events</td>
</tr>
</tbody>
</table>
ESSAY

Challenges and opportunities in understanding dementia and delirium in the acute hospital

Thomas A. Jackson¹², John R. F. Gladman³, Rowan H. Harwood⁴, Alasdair M. J. MacLullich⁵, Elizabeth L. Sampson⁶, Bart Sheehan⁷, Daniel H. J. Davis⁸

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The Diagnosis of Delirium Superimposed on Dementia: An Emerging Challenge

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A breakdown in brain function in individuals with impairment in brain connectivity and brain plasticity exposed to a stressor.
• 3 rounds of audit
• Spotlight audit
• 117 sites, 20 sets of notes each
• 51% initial assessment (84% follow up)
• Over 25% no confusion/cognitive tests carried out
• **52% not recorded in discharge summary**

• People with dementia **must always** be assessed for delirium
• Implementation of procedures
  • Assessment, recording, follow-up
  • Staff training – recognition, investigation, management
  • Effective communication throughout admission and to GP
• Amend questions in Round 4
Pathophysiology of Delirium

- Deficiency of Acetylcholine (Gunther, 2008)
- Discrepancies in Melatonin availability
- Dopamine excess (Maldonado, 2009)
- Excess of norepinephrine/glutamate
- Variable alterations – serotonin, histamine, GABA
- ↓ plasma concentration Protein C, ↑ concentration of TNF receptor-1
- Inflammatory cytokines (de Rooj)
- Stress mediators (MacLullich)
- Markers of CNS damage (Hall et al)
- Reduced overall cerebral blood flow (Yokota et al, 2003)
Management of Delirium

‘A systematic and holistic perspective of the care of older hospitalized patients with signs of delirium was missing, and the patients seemed to be exposed and vulnerable.’

Management of Delirium

- Review medication
- Correct visual/auditory deficit (glasses/hearing aids)
- Early mobilisation
- Adequate analgesia
- Calming, unambiguous communication, approach patient from the front
- Nutrition, fluid balance, skin care, remove unnecessary lines
- Well lit room
MANAGEMENT OF DELIRIUM

• Keep staff changes to a minimum; staff should be easily identifiable
• Orientating cues, familiar items from home, family
• Quiet/relaxing night environment
  • Re-establish sleep pattern
• Therapeutic activity
• Education

• Identify and treat the underlying medical cause
  • Careful physical and neurologic examination
Delirium in Older persons; Advance in Diagnosis and Treatment.
Oh et al in *JAMA* 2017;318(12):1161-1174

<table>
<thead>
<tr>
<th>Approach</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orientation and therapeutic activities</td>
<td>Provide lighting, signs, calendars, clocks. Reorient the patient to time, place, person, your role. Introduce cognitively stimulating activities (e.g., reminiscing). Facilitate regular visits from family, friends.</td>
</tr>
<tr>
<td>Fluid repletion</td>
<td>Encourage patients to drink; consider parenteral fluids if necessary. Seek advice regarding fluid balance in patients with comorbidities (heart failure, renal disease).</td>
</tr>
<tr>
<td>Early mobilization</td>
<td>Encourage early postoperative mobilization, regular ambulation. Keep walking aids (canes, walkers) nearby at all times. Encourage all patients to engage in active, range-of-motion exercises.</td>
</tr>
<tr>
<td>Feeding assistance</td>
<td>Follow general nutrition guidelines and seek advice from dietician as needed. Ensure proper fit of dentures.</td>
</tr>
<tr>
<td>Vision and hearing</td>
<td>Resolve reversible cause of the impairment. Ensure working hearing and visual aids are available and used by patients who need them.</td>
</tr>
<tr>
<td>Sleep enhancement</td>
<td>Avoid medical or nursing procedures during sleep if possible. Schedule medications to avoid disturbing sleep. Reduce noise at night.</td>
</tr>
<tr>
<td>Infection prevention</td>
<td>Look for and treat infections. Avoid unnecessary catheterization. Implement infection-control procedures.</td>
</tr>
<tr>
<td>Pain management</td>
<td>Assess for pain, especially in patients with communication difficulties. Begin and monitor pain management in patients with known or suspected pain.</td>
</tr>
<tr>
<td>Hypoxia protocol</td>
<td>Assess for hypoxia and oxygen saturation.</td>
</tr>
<tr>
<td>Psychoactive medication protocol</td>
<td>Review medication list for both types and number of medications.</td>
</tr>
</tbody>
</table>
Pharmacological Treatment for Delirium

- Use psychotropics **sparingly** (or not at all!)
- Pharmacological management remains controversial
- Evidence that use of Lorazepam causes deterioration
Pharmacological Treatment for Delirium

• Haloperidol is (my) drug of choice
  • Less potential for anticholinergic/cardiac/sedative side effects
  • Ample experience in elderly and medically ill patients
  • Low dose
    • **0.5-1mg PO;** can titrate up to total daily dose of 3mg
    • Severe agitation 1-2mg IM
Complications of Delirium

• **Frightening for patients** (and relatives)
  • May last a few days, but can last a few weeks or longer
  • Increased risk of falls, pressure sores, loss of functional status
  • Increased risk of morbidity and mortality
    • Hospital mortality 22-76%
      • Greater at lower levels of frailty (Dani et al, 2018)
    • One year mortality 35-40%
Complications of delirium

- Increased length of stay
- Increased institutionalisation
- Increased social and health costs
- May worsen progression of dementia
  - Additional decline of 0.72 MMSE points per year (Davis et al 2017)
'Post-op panic' link to suicide: Dangers highlighted by investigation into death of British jewellery designer who committed suicide hours after facelift

- Report in U.S. magazine tracks hours before suicide of Sandra d'Aurioi
- British jewellery designer committed suicide hours after facelift
- Brother Guy believes death was 'direct result of post-operative psychosis'
- He says Miss d'Aurioi woke after operation in a state of panic

By MAIL ON SUNDAY REPORTER
PUBLISHED: 22.06. 29 March 2014 | UPDATED: 22.06. 29 March 2014

The dangers of 'post-operative psychosis' have been highlighted by an investigation into the suicide of British jewellery designer and philanthropist Sandra d'Aurioi hours after she had a facelift.

Ms d'Aurioi jumped to her death from the roof of a Los Angeles clinic shortly after coming round from the operation in January.

Now the details of the 53-year-old's last hours have been pieced together in an investigation for U.S. beauty magazine Allure by cosmetic surgery journalist Joan Kron.

Sandra d'Aurioi was a 53-year-old woman and much loved wife and mother. She was a renowned Hong Kong jewelry designer and philanthropist known for her charitable work worldwide. Her death sparked an outpouring of grief from all corners of the globe and this serves as a reminder of how she touched so many lives.

Through this website, we aim to build awareness and educate the public of the risks of post-operative neurobehavioral disturbance (POND) that may arise as a result of undergoing anesthesia to help others avoid a similar tragedy. The website also serves as a platform for healthcare practitioners, researchers and patients to discuss and share their experiences and medical expertise. In doing so, we hope to encourage best practices and facilitate discussions on future healthcare policies in this field.

Socialite's suicide leap due to post-op psychosis: LA coroner

By NANCY DILLON

NEW YORK DAILY NEWS Wednesday, April 2, 2014 6:09 PM
To study the phenomena of disease without books is to sail an uncharted sea, while to study books without patients is not to go to sea at all.

William Osler

With grateful thanks to Dr Stephanie Campbell (ST5 Psychiatry) and to patient Mr C for the patient video.
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