Delirium in Patient with Neck of Femur Fractures

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2/3 of hip fractures occur in older people (>80yrs)

Ageing population

£2 billion in social and healthcare costs

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AGEING…

…the accumulation of changes in an organism or object over time. Ageing in humans is multidimensional.
Pain, tachycardia
Opiates
Lack of sleep
New location
Constipation
Urinary retention
Anaemia
Delirium
Threshold
100%

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The peri-operative roller-coaster

‘Some of the sickest patients in the hospital’

‘A hip fracture is a surgical complication of a medical patient’
Delirium

“out of ones furrow”

Acutely confused
Delirium

- A common disorder following hip fracture (~50% pts)
  - Associated with¹
    - Poorer outcomes
    - Higher healthcare costs
    - CH placement
    - Mortality

Aetiologically nonspecific organic cerebral syndrome characterised by concurrent disturbances of consciousness and attention, perception, thinking, memory, psychomotor behaviour and emotion, and disturbance of the sleep-wake schedule.

Delirium “is a common clinical syndrome characterised by disturbed consciousness, cognitive function or perception, which has an acute onset and fluctuating course”
Delirium – Multifactorial model

- **Predisposing factors**
  - Dementia
    - Older
    - More comorbidities
    - Higher ASA grade
  - Severe illness
  - Depression

- **Precipitating factors**
  - Surgery
  - Pain
  - Analgesia
  - Anaesthesia
  - Change in location / environment

May be large in patients with hip fractures
i.e. may ‘run’ v. close to the threshold

Could be small
Pain, tachycardia
Opiates
Lack of sleep
New location
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Delirium History

• Collateral history very important
  - Duration
  - Clues to aetiology
    • Prodromal symptoms
    • Recent procedures
    • Precipitant factors
  - Drug history

• Alcohol history

• Hearing aid / glasses
Delirium Types

• Varied syndrome
  - Hyperactive (21%)
  - Hypoactive (24%)
  - Mixed (49%)↑
Hyperactive “up”

- Oversensitive to stimuli
- Hallucinations
- Delusions
Hyperactive “up”

- Repeatedly getting out of bed
- Falls risk ↑
- Psychomotor agitation

• Heightened arousal
Hypoactive “down”

- Psychomotor retardation
  - Lethargy
  - Quiet
  - Paucity of speech
  - Few psychotic symptoms
  - Pressure sore risk ↑
Subtype vs severity

- Hypoactive delirium least likely to be documented\(^5\) but…. occurs the most up to 70% of cases\(^4\).
  - Hypoactive delirium more likely associated with a high serum AChE activity…

- Presence of abnormal hand movements with highly suggestive of delirium but not subtype specific\(^7\)
Psychomotor subtypes fluctuate often from assessment to assessment\textsuperscript{5}
Overlap disorders

• Most common overlap is with dementia

• Often also associated with depression (21.7%)\(^5\)
  - Depression present between 9 and 47% of patients with hip fracture
  - Overlap confers a worse outcome
    • Increased complications
    • Increased length of stay
How to spot delirium?
How to spot delirium? – NICE(2010)

- Cognitive function
  - Reduced concentration
  - Slow responses
  - “Confusion”

- Perception
  - Visual or auditory hallucinations

- Physical function
  - Reduced mobility / movement
  - Restlessness / agitation
  - Changes in sleep / feeding

- Social behaviour
  - Withdrawal
  - Lack of cooperation / reduced communication
  - Alterations in mood / attitude
Preventing Delirium 1 (NICE)

- Multi-component interventions work
  - Address disorientation
    - Appropriate lighting, calendars, clocks,
    - Regular family / friend visits, talking to pt to re-orientate them
  - Address hydration / nutrition and constipation
    - Dentures fit?
    - Fluid and stool chart review daily
  - Address hypoxia
Preventing Delirium 2

• Address infection
  - Look for potential sites and treat
  - Avoid catheters where possible

• Address immobility / reduced mobility
  - Encourage to mobilise post surgery asap
  - Sit out

• Manage pain
  - Look for non-verbal signs

• Address sensory impairment
  - Remove ear wax
  - Adequate lighting
The multi-factorial program for patients in the intervention group (n = 131) undergoing surgery for hip fracture, starting pre-hospitaly.

1. **Supplemental oxygen 3–4 l/min**: in the ambulance and continually (including transfers between wards/departments) until day 2 post-operatively, the patient is mobilized, or the patient’s oxygen saturation is ≥ 95% without oxygen in order to increase oxygen delivery into the tissues.6,13,40

2. **Intravenous (i.v.) fluid supplementation and extra nutrition**: fructose/glucose 1.01 in the ambulance or immediately after admittance to the A&E for improvement of fluid balance and tissue perfusion. Additional i.v. supplementation in case of increased fasting. Extra oral multi-nutrient drinks daily post-operatively for improvement of nutritional balance.90,41–43

3. **Increased monitoring of vital physiological parameters**: especially oxygen saturation (a pulse-oximeter should be kept adherent to every patient) starting at the place of injury until post-operatively, day 5. Systolic blood pressure should be maintained ≥ 90–100 mmHg. Red blood cell transfusion should be considered if hemoglobin < 100 g/l. Body temperature should be kept normal; avoid hypo-/ hyperthermia.13,30,31,44

4. **Adequate pain relief**: immediately after admittance at the A&E with a combination of opioids i.v. and paracetamol. Pain should be measured several times on a daily basis ≥ day 5 as pain: yes/no, and as intensity of pain: 1–10. Patient should be kept continually pain-relieved.27,28

5. **Avoid delay in transfer logistics**: nurse assessment (RN) of patient immediately (≤ 5 min) after admittance to the A&E. Assessment by the orthopedic surgeon (≤ 30 min) before referral to the X-ray department. After X-ray directly to the orthopedic ward without a second visit to the A&E (routine before the intervention) with the purpose of decreasing the waiting time and an overload of staff–patient interactions.18,33,34

6. **Screen for delirium through daily testing with the OBS scale**: one researcher is always available day and night. All staff is educated and instructed to pay increased attention to symptoms of delirium.22

7. **Avoid polypharmacica**: sedatives/hypnotics and drugs with anticholinergic properties should be administered with restriction.6,29

8. **Perioperative/Anesthetic period**: for pre-medication paracetamol is recommended as a first choice. Propofol and/or alfentanil i.v. is recommended at arrival at the operating department before transfer to the operation table. Spinal anesthesia with bupivacain is recommended as a first choice. I.v. saline-acetate 0.5% should be administered before application. Systolic blood pressure should be maintained at > 2/3 of baseline or > 90 mmHg. Red blood cell transfusion should be administered if there is a tendency toward increased blood loss (> 0.3 l) or hemoglobin < 100 g/l. For sedation, propofol is recommended. Give adequate post-operative analgesia with paracetamol as a first choice or in combination with an opioid.13,28,31,32,45

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Delirium Management

- Treat underlying problems (may be lots)
- Relieve pain
- Calm environment and staff
- Make sure they get food/fluid/drugs
- Appropriate lighting + sleep
- Visitors
- Hearing aid and glasses
Delirium Management

- Cot-sides
- Catheters
- Bed / ward transfers
- Physical restraints
How to assess

- CAM
- MDAS (Memorial delirium assessment scale) – can assess severity
- 4AT
The diagnosis of delirium by CAM requires the presence of BOTH features A and B

<table>
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<tr>
<th>Feature</th>
<th>Question</th>
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| A. Acute onset and Fluctuating course | Is there evidence of an acute change in mental status from patient baseline? Does the abnormal behavior:  
- come and go?  
- fluctuate during the day?  
- increase/decrease in severity? |
| B. Inattention | Does the patient:  
- have difficulty focusing attention?  
- become easily distracted?  
- have difficulty keeping track of what is said? |
| C. Disorganized thinking | Is the patient’s thinking  
- disorganized  
- incoherent  
For example does the patient have  
- rambling speech/irrelevant conversation?  
- unpredictable switching of subjects?  
- unclear or illogical flow of ideas? |
| D. Altered level of consciousness | Overall, what is the patient’s level of consciousness:  
- alert (normal)  
- vigilant (hyper-alert)  
- lethargic (drowsy but easily roused)  
- stuporous (difficult to rouse)  
- comatose (unrousable) |

MDAS (Memorial delirium assessment scale)

- 10 item tool, each scored out of 3.
- Maximum score = 30

- Assessment of severity of delirium

- Not a rapid assessment – but useful in research
[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 <7 months / 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

4 or above: possible delirium +/- cognitive impairment
1-3: possible cognitive impairment
0: delirium or severe cognitive impairment unlikely (but delirium still possible if [4] information incomplete)

4AT SCORE [ ]
The 4AT test

- Many reliable assessment tools for delirium exist but…the 4AT has
  - **brevity** (generally <2 min),
  - **no special training** required,
  - **simple** to administer (including in people with visual or hearing impairment),
  - does not require **physical responses**,
  - allows for assessment of ‘**untestable**’ patients (those who cannot undergo cognitive testing or interview because of severe drowsiness or agitation)
  - and **incorporates general cognitive screening**
Conclusions

• Delirium is very common following hip fracture (close to the threshold and with multiple precipitants)
• It is debilitating and associated with high mortality and morbidity
• Screening works! > Multifactorial interventions work

• We propose:
  - Measurement of 4AT test
Measurement of the 4AT test reflects on the quality of delirium assessment on a unit in KSS (and therefore ?? management)

Was the 4AT score measured between 24-36 hours post-operatively?

Was the 4AT score measured between 4-7 days post-operatively?
References

1. Inouye S. Predisposing and precipitating factors for delirium in hospitalized older patients. Dement Geriat Cog Disord 1999; 01:393-400
2. Lee et al. Predisposing factors for postoperative delirium after hip fracture repair in individuals with and without dementia. JAGS 2011 59:2306-2313