Alcohol and Mental Health in Acute Medical Care

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Contents

1 Delirium Tremens
2 Wernicke- Korsakoffs syndrome
3 Mental Health Problems relating to alcohol psychosis, self harm and suicide
4 RADAR
The GABA-benzodiazepine [GABA_A] receptor complex.

This receptor is the brain’s major inhibitory system.

Acutely, alcohol increases activity of this system leading to:
- reduced anxiety
- ataxia
- slurred speech
- disinhibition
- sedation
- reduced levels of consciousness
The $\text{GABA}_A$ receptor & alcohol (Mahmoudi et al 1997)

- **GABA**
  - $\alpha$
  - $\beta$
  - $\gamma$

- **GABA + alcohol**
  - $\alpha$
  - $\beta$
  - $\gamma$

- **GABA + alcohol tolerance**
  - $\alpha 1-6$, $\beta 1-3$, $\gamma 1-3$
  - Acute alcohol tolerance
  - Chronic alcohol tolerance
  - ? subunit switch
Alcohol is an NMDA receptor antagonist

$\downarrow \text{Ca}^{2+} \text{ flux} \quad \downarrow \text{excitation}$
Glutamate: ‘excitatory system’

- Acutely, alcohol inhibits this system: NMDA

- Chronic alcohol leads to receptor up-regulation
Timing of Alcohol Withdrawal

<table>
<thead>
<tr>
<th>Syndrome</th>
<th>Onset after last drink</th>
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<tbody>
<tr>
<td>I. Tremulousness</td>
<td>6-36 hours</td>
</tr>
<tr>
<td>II. Hallucinations</td>
<td>12-48 hours</td>
</tr>
<tr>
<td>III. Seizures</td>
<td>6-48 hours</td>
</tr>
<tr>
<td>IV. Delirium Tremens</td>
<td>3-5 days</td>
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</table>
I dreamt a dream the other night I couldn't sleep a wink
The rats were tryin' to count the sheep and I was off the drink
There were footsteps in the parlour and voices on the stairs
I was climbin' up the walls and movin' round the chairs.
I looked out from under the blanket up at the fireplace.
The Pope and John F. Kennedy were starin' in me face.
Suddenly it dawned on me I was getting the old D.T.s
When the Child o' Prague began to dance around the mantlepiece.

Christy Moore
“Delirium Tremens”
Delirium Tremens

Severe complication of alcohol withdrawal (Victor and Adams 1953)

Symptoms emerge several hours- days after cessation or reduction in alcohol

Symptoms peak 48-72 hours

Tremor

Hallucinations (auditory, visual, olfactory)

Confusion

Associated delusions, insomnia, agitation

Tachycardia, hyperthermia, hypertension, tachypnoea
Epidemiology

Meta-analysis of prospective RCT

Placebo rates of delirium 5%

Benzodiazepines reduced risk of developing delirium by 4.9 cases per 100 patients (Mayo-Smith et al 1997)

Mortality most recent review indicated mortality between 0-1%

Predictors mortality temperature > 104°F, seizures, liver disease, pneumonia, low bp
## Risk factors for DTs

<table>
<thead>
<tr>
<th>Predisposing</th>
<th>Positive predictors</th>
</tr>
</thead>
<tbody>
<tr>
<td>various authors</td>
<td>Palmstierna T, 2001; Psychiatric Services 52: 820-823 Sweden</td>
</tr>
</tbody>
</table>

**Severe dependency,**  
**High BAC when withdrawals occur**  
**Drinking pattern**  
**Abrupt cessation of intensive drink**  
**Kindling processes eg prev DTs**  
**Recent epileptic seizure**  
**Concurrent medical problems O.R 5.1**  
**Metabolic abnormalities**  
**Use of sedative-hypnotic drugs**  
**Older age > 60 O.R 4.7**  
**Male sex**  

**Infectious disease**  
**Tachycardia at admission >120**  
**Withdrawals with BAL > 1g/L=7 units**  
**History of epileptic seizures/ DTs**  
**Korea 59/ 147 patients developed DT**  
**History of delirium tremens**  
**Tachycardia >100 bpm**  
- 20% dev DTs if no risk factors  
- 46% dev DTs if one factor present  
- 100% if both factors present
Prevention of delirium tremens

1. Use of prediction rating scales to identify high risk individuals

2. Physical examination; tachycardia >120 whilst positive breathalyser reading >0.5 with severe withdrawals on CIWA-Ar

3. Active investigation of causes of confusion, pyrexia, raised WBC, MSU, sputum, CXR, Mg levels, BM, CT/EEG
4. If high risk group, commence CDZ 50mg qds + serial CIWA-Ar; if severe range give an additional 20mg PRN
5. Correct Magnesium levels with MgSO4 and correct other electrolyte disturbance
6. Treat underlying causes e.g. infection
Management of established delirium tremens

1. Continued assessment
2. Fluid balance; daily U/E, Mg
3. IV Pabrinex extended for further 3 days and reviewed
4. Maintain CDZ 50-100 mg qds + PRN for at least 5 days/ delirium settles Oral IM Lorazepam
5. Rapid tranquillisation policy
6. MHA
7. Treat all causes of delirium
Supportive Care

- Quiet environment
- Hydration - may have 6 L volume deficit IVI
- Electrolyte correction
- Nutrition
- Nursing care (reassurance/orientation)
- Monitor for signs/symptoms of withdrawal CIWA-Ar
- Monitor risk self harm and falls
Who goes to the ICU?

- Age over 40
- Significant cardiac disease
- Hemodynamic instability
- Marked acid-base disturbances
- Respiratory disease
- Serious infection
- Significant GI pathology
- Temp>103 F
- Rhabdomyolysis
- History of seizure or DT
- ARF
- Benzodiazepine drip
Wernicke Encephalopathy

ACUTE NEUROPSYCH REACTION THIAMINE DEFICIENCY

- ONSET ABRUPT OFTEN ARISE IN D.T.'s

- CONFUSION-APATHY, INATTENTIVENESS

- OPHTHALMOPLEgia- NYSTAGMUS, WEAKNESS EXTERNAL RECTUS/ CONJUGATE GAZE

- ATAXIA WIDE-BASED STANCE, SLOW UNCERTAIN GAIT, VESTIBULAR PARESIS

- SUBCLINICAL FORMS
- REPEATED EPISODES
- ADDITIONAL SYMPTOMS / SIGNS -

- LETHARGY/ HYPOTENSION/ HYPOTHERMIA

- BLUNTED AFFECT

- PERIPHERAL NEUROPATHY (80%)/ BERI-BERI (Rare)

- MEMORY DEFICITS IF SLOW AND INCOMPLETE RECOVERY POOR

PROGNOSIS
Clinical Aspects

**KORSAKOFF (AMNESTIC) SYNDROME**

Psychosis Polyneuritica

Disproportionate impairment of memory c.f other cognitive function and patchy retrograde amnesia

Alert apathetic, indifferent, lack of spontaneity confabulation

Often but not always arises out of episode of Wernickes encephalopathy

Subclinical presentations without preceding Wernickes episode

40% DTs develop WKS

Can be difficult to differentiate from Alcoholic dementia

Memory deficits in the non WKS alcoholic when still drinking
How common is Wernicke Korsakoff Syndrome

26,691 postmortems general hospitals
1.4% cases indicative WKS

In alcoholics neuropathological lesions WKS
12.5%

35% WKS + cerebellar degeneration
(thiamine dependent)

80% cases not diagnosed prior to post-mortem

(Harper et al., 2003)
If Wernicke's is so common why don't we see it in our patients?

<20% of Wernicke's is diagnosed

Harper 1986
1. Daily requirement 1-2mg. Increased in alcoholism (RDA men 1.4; women 1.0)

2. Body stores are small.
   Liver: 3-4 mg. Total body ?30 mg

3. Depletion soon reflected in reduced circulating levels
   Reduced stores: Liver: controls 11.5 pg/µg
   Severe fatty liver 1.6 pg/µg

Biochemical lesions
Figure 22

Impaired utilization

apoenzyme + coenzyme = enzyme

7 blocked?

A +B C +D

Reduced absorption

↓ lactose
↓ thiamine
↓ B₁₂
↓ folic acid
↓ glucose
↓ iron

Urinary excretion

↑ Mg
↑ K
↑ Zn

"EMPTY CALORIES"

Ethanol

↑ metabolic demands

4

Reduced absorption

3

Vomiting diarrhoea steatorrhoea

2

Inadequate diet

1

Impaired appetite

Economic factors

5

Need DNA/RNA synthesis and liver regeneration

6

Hepatic storage

Release from necrotic cells
PREVENTION

ASSESSMENT OF AT RISK GROUPS

- ? ALL PATIENTS REQUIRING INPATIENT DETOXIFICATION

i] INCIPIENT OR ESTABLISHED WERNICKE ENCEPHALOPATHY.

CONFUSION + / - ATAXIA, MEMORY DISTURBANCE, OPTHALMAPLEGIA, COMA,

OFTEN PRESUMPTIVE DIAGNOSIS

ii) AT RISK GROUP
HISTORY/CURRENT SEVERE WITHDRAWALS
VERY HEAVY CONSUMPTION
POOR DIET WEIGHT LOSS
PERIPHERAL NEUROPATHY

iii) LOW RISK GROUP
WELL NOURISHED LOWER LEVEL CONSUMPTION
NO HISTORY SEVERE WITHDRAWALS
PREVENTION

TREATMENT GUIDELINES

1  INCIPIENT WERNICKE'S
   2 PAIRS PABRINEX AMPOULES (≥ 500 MG
   THIAMINE) TDS BY IV INFUSION FOR 3 DAYS
   FOLLOWED BY 1 PAIR PABRINEX
   AMPOULES OD BY IM FOR FURTHER 3 - 5 DAYS

2  AT RISK GROUP
   1 PAIR PABRINEX AMPOULES (≥ 250 MG
   THIAMINE) OD BY IM FOR 3 - 5 DAYS
   N.B. IV ROUTE MAY BE USED e.g. BLEEDING DIATHESIS

3  LOWER RISK GROUP
   THIAMINE 50 MG ORAL QDS
   VITAMIN B COMPLEX STRONG 2 TABLETS TDS
Alcohol Related Psychosis

- Secondary psychosis prominent hallucination can occur in withdrawals (or intoxication)
- True alcoholic hallucinosis occurs with a clear sensorium
- 3-10% of withdrawal develop hallucinations classically auditory (2nd person derogatory) can be visual, tactile
- Usually resolve in 48 hours but can persist for up to 28 days of last intoxication/withdrawal
Alcohol Related Psychosis

- Increased incidence with longer history of alcohol use, more frequent admissions and abuse of other psychoactive drugs
- Need to exclude exacerbation or emergence of underlying psychosis e.g. schizophrenia or bipolar disorder
- Treatment Lorazepam, cautious use of high potency neuroleptic (haloperidol)
Self harm/ Suicide

- 15% alcoholics at risk of suicide one of the commonest associated psychiatric diagnosis
- Significant risk of worsening depression during alcohol withdrawals
- Monitor those at high risk, ask about previous risk during withdrawal? Manage on Psych ward
- Self harm associated with confusion/delirium
- May develop DTs after DSH attempt
RADAR

Rapid Access to (alcohol) Detoxification: Acute hospital Referrals
Rapid transfer of patients presenting to acute hospital to a specialist facility who:

- Want to stop drinking and require a detoxification who otherwise would have been admitted to acute bed
- Close working with Alcohol Nurse Specialist within Acute Hospitals (gatekeeping, referral pathway,)
- Transfer as rapidly as possible
- Rapid access to medically managed detoxification 24 hour per day
- Utilising 8 beds at Chapman Barker Unit
- 5-7 day admission multi-disciplinary team, 24 hour hospital at night and medical support specialist individual and group PSI therapies
- Emphasis on engagement in aftercare and recovery communities
Main Aims and Outcomes:

1. To reduce burden on Acute Trusts in relation to alcohol related admissions
   
   **Sub-groups**
   
   *Frequent fliers* - highest users of services, repeat short term admissions, complex physical and mental health issues. Improved working with frequent flier teams care planning and follow up

   *Acute presentation in withdrawal* - potential benefit of earlier specialist intervention, detox completion and engagement with aftercare

2. To improve clinical outcomes for service users

3. To provide improved experience for service users in a therapeutic setting

4. To demonstrate cost effectiveness
Admission by referring hospital

Total 636

Salford Royal
Wigan and Leigh
MRI
NMGH
Royal Oldham
Royal Bolton
Fairfield
Rochdale
Steppinghill
Wythenshawe
Tameside
Trafford

Total 636
Patient Profile

- 636 patient episodes in first 2 years
- 67.5% Male
- Mean age 44 range 18-76 (30% < 35 years old, 23% > 50 years old)
- 75.6% Unemployed
- 83% Settled Accommodation
- 20% Married or Cohabiting
- 46% ‘Frequent Flyers’ (3 or more presentations in preceding 6 months)
- 7% Open to Frequent Flyer teams
- 30% Open to Community Alcohol service
- 18% Open to mental health service
- 64% Not open to any services at point of referral
- 11% Never known to any service
JMU Telephone Survey Outcomes

98 patients by JMU Researchers

6/12 pre and post RADAR outcomes

89.6% drinking less/abstinent

Attending Alcohol services:

47% pre RADAR

69% post RADAR

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>Z score</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A&amp;E visits pre RADAR</td>
<td>3.16</td>
<td>9.28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A&amp;E Visits post RADAR</td>
<td>0.55</td>
<td>1.15</td>
<td>-5.79</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Overnight hospital stay pre RADAR</td>
<td>2.26</td>
<td>9.31</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overnight hospital stay post RADAR</td>
<td>0.28</td>
<td>0.65</td>
<td>-5.28</td>
<td>&lt;0.001</td>
</tr>
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Aim 2: Improved Clinical Outcome

Completed Treatment (n=636)
- 604 completed detox (95%)

Planned Stay
- 600 stay 5-7 nights (88%)
- 32 shorter stay (5%)
- 44 extended stay (7%)

Planned Discharge
- 591 - planned discharge (93%)
- 10 - completed detox, but left early (1.5%)
- 32 - unplanned discharges (5%)
- 3 - completed detox, transferred to hospital or CBU (0.5%)
Aim 2: Improved Clinical Outcomes

Rates of recovery and abstinence

4 week Follow Up of Successful discharges (n=250)

15% outcome not known
Of those known:
74% Abstinent or Controlled

3 month Follow up:
32% outcome not known
Of those known:
59% Abstinent or Controlled
## Estimated Money Savings – Year 2

<table>
<thead>
<tr>
<th>Description</th>
<th>6 months</th>
<th>12 month</th>
</tr>
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<tbody>
<tr>
<td>General bed-nights saved due to RADAR admission</td>
<td>517,594</td>
<td>517,594</td>
</tr>
<tr>
<td>A&amp;E attendances</td>
<td>104,929</td>
<td>209,858</td>
</tr>
<tr>
<td>Hospital admissions</td>
<td>1,008,410</td>
<td>2,016,820</td>
</tr>
<tr>
<td>Outpatient attendances</td>
<td>34,305</td>
<td>68,610</td>
</tr>
<tr>
<td>GPs</td>
<td>23,085</td>
<td>46,170</td>
</tr>
<tr>
<td>Other detox</td>
<td>9,471</td>
<td>18,942</td>
</tr>
<tr>
<td>Total</td>
<td>1,180,200</td>
<td>2,360,400</td>
</tr>
<tr>
<td>TOTAL BENEFITS</td>
<td>1,697,794</td>
<td>2,877,994</td>
</tr>
<tr>
<td>RADAR COST</td>
<td>884,315</td>
<td>884,315</td>
</tr>
<tr>
<td>BENEFIT - COST</td>
<td>813,479</td>
<td>1,993,679</td>
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Final Summary

- Pilot Project ended on 31st October 2013
- Agreed Funding for a further 18 months (6 months + 12 months) until March 2016
- Funding source is via the Greater Manchester CCG
- Huge benefit for Acute Trusts and Commissioners in managing A&E acute bed pressures.
- Huge benefit to our patients!
- Royal College of Psychiatrists Team of the Year (non age specific) 2014!