Alcohol withdrawal – A challenge in caring for patients after heart surgery

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Content

- Alcohol consumption and its consequences
- Risk of developing withdrawal symptoms and withdrawal delirium
- The course of an alcohol withdrawal
- Some pathophysiological aspects
- The neuro-chemical problem of the abstinence phase
- Prevention and treatment
- Preliminary data of our withdrawal programme
Is moderate alcohol consumption healthy?
The association of pattern of lifetime alcohol use and cause of death in the European Prospective Investigation into Cancer and Nutrition (EPIC) study

- 111,953 men
- 268,442 women
- Eight European countries
Alcohol consumption and related risk for death caused by coronary heart disease

There seems to be a preventive effect of light to moderate alcohol consumption for death caused by coronary heart disease

Bergmann MM. *Int J Epidemiol.* 2013;42:1772-1790
Alcohol consumption and related risk for death caused by alcohol related cancer

<table>
<thead>
<tr>
<th>Low risk</th>
<th>High risk</th>
<th>Bing drinking</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;12g/d ♂</td>
<td>&gt;12 &lt; 30g/d ♂</td>
<td>&gt;30g/d ♂</td>
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<tr>
<td>&lt; 24g/d ♂</td>
<td>&gt;24 &lt; 60g/d ♂</td>
<td>&gt; 60g/d ♂</td>
</tr>
</tbody>
</table>

Only never drinking prevents death due to alcohol related cancer

Bergmann MM. *Int J Epidemiol.* 2013;42:1772-1790
Effects of high risk drinking

High risk
> 12 < 30g/d ♀
> 24 < 60g/d ♂

Binge:
> 3 bottles of beer
> 60g
> 1 bottle of wine

- Alcohol cardiomyopathy (ACM) constitutes up to 40% of patients with non-ischemic dilated cardiomyopathy.
  Brinkley DM. Transplantation. 2014;98:465-469

- Binge and heavy irregular drinking modify the favourable effect of alcohol intake on the CHD risk
  Bagnardi V. J Epidemiol Community Health. 2008;62:615-619

- Binge-Drinking once 1 month in one’s forties is associated with a 3.2 fold risk for the development of dementia; 2 occasions per month: 10 fold

Risk for alcohol withdrawal and alcohol withdrawal delirium

- Risk for alcohol withdrawal
- 5-10% risk for alcohol withdrawal delirium


Risk for withdrawal in association with 3-4x weekly alcohol consumption

♂: 5+ = 70g alcohol = 18dl beer = 7.5 dl wine
♀: 4+ = 56g alcohol = 15dl beer = 6 dl wine
The course of alcohol withdrawal

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Frequency 95%</th>
<th>4.67%</th>
<th>0.33%</th>
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<tbody>
<tr>
<td>Alcohol withdrawal syndrome (AWS): development of alcohol withdrawal delirium (AWD) in 7% of all cases</td>
<td></td>
<td>AWD</td>
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<tr>
<td>Tremble: light tremor</td>
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<tr>
<td>Increased finger/ hand tremor</td>
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<tr>
<td>Anxiety/ depressive mood</td>
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<tr>
<td>Insomnia</td>
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<tr>
<td>Sweating</td>
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<td>Heavy palpitation</td>
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<tr>
<td>Increased blood pressure</td>
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<tr>
<td>Nausea or vomiting</td>
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<tr>
<td>Inner agitation</td>
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<tr>
<td>Transient visual, tactile, or auditory hallucinations</td>
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<tr>
<td>Epileptic seizures</td>
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<td>Fever</td>
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<td>Delusion</td>
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<tr>
<td>Psychomotor agitation</td>
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<tr>
<td>Heavy clouding of consciousness</td>
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<tr>
<td>Disorientation</td>
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<tr>
<td>Disturbance of memory</td>
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<tr>
<td>Severe pulmonary dysfunction</td>
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</table>

<table>
<thead>
<tr>
<th>Hours/days</th>
<th>6-12h</th>
<th>12-24h</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Withdrawal</td>
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<tr>
<td>Withdrawal delirium</td>
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Pathophysiological aspects of withdrawal in the brain (1)

- **Acute alcohol consumption**
  - Reinforces inhibiting effect of GABA receptor
  - Blocks activating function of NMDA receptor
  - => sedative effect

- **Chronic alcohol consumption**
  - Reduction of GABA receptors
  - Increasing of NMDA receptors
  - => tolerance, lack of sedative effect

- **Sudden interruption of chronic alcohol consumption**
  - Disinhibition and excitation of the brain
  - => Glutamate ↑
  - => Glucocorticoid receptor ↓

Vendruscolo LF. *J Neurosci.* 2012;32:7563-7571
Pathophysiological aspects of withdrawal in the brain (2)

- As a rule of thumb a withdrawal delirium is self-limiting after 7 – 10 days

- When withdrawal delirium is finished:
  - Protracted abstinence from chronic ethanol exposure alters the structure of neurons => Alcohol disease in progression
  - The pathology of the upregulated glucocorticoid receptor starts to destroy brain structures
    Navarro AI. Neuroscience. 2015;293:35-44

- Consequences:
  - The brain demands for alcohol (craving)
  - Low cues (priming) are sufficient to initiate relapse (kindling)
  - After each withdrawal, the upcoming withdrawal will increase in severity

Like a hostile take-over alcohol has gained control over the brain
Prevention and Treatment of alcohol withdrawal

- **Prevention:**
  - Screening for high-risk drinking and alcohol dependence
  - Substitution of alcohol with GABA-ergic medications such as benzodiazepines

- **Treatment (detoxification):**
  - Benzodiazepines as substitution
  - Clonidine to treat vegetative symptoms such as elevated blood pressure etc.
  - Haloperidol against hallucinations or Dexmedetomidin on ICU

- In protracted abstinence *(weaning off treatment)*:
  - Acamprosate
  - Psychotherapy
Systematic Nurse-Led Approach for Withdrawal Risk Screening and Prophylaxis among Inpatients with Alcohol Dependence in an Ear, Nose, Throat and Jaw Surgery

**Background:**

- In 2010 and 2011 few patients after long-lasting ENT surgery developed alcohol withdrawal delirium
- Deliria were persistent over several weeks
- Sitters 24/7 were required
- The ENT was highly interested in finding solutions

**Methods**

- An interdisciplinary and inter-professional practise development project was initiated
Methods

- **Interventions**
  - A systematic screening for high-risk drinking and alcohol dependence was introduced for patients with long-lasting surgery.
  - Patients at risk for withdrawal or withdrawal delirium were offered a substitution therapy with Lorazepam (4 x 1 mg Lorazepam fix scheduled).
  - Nurses assessed patients in the Lorazepam programme with the Revised Clinical Institute Withdrawal Assessment For Alcohol Scale (CIWA-Ar).
  - In case of mild withdrawal symptoms (CIWA-AR ≥ 8/67) additional Lorazepam was administered.
Data collection and results

- **Data collection:**
  - Retrospective Chart review 2014

- **Results:**
  - 87 Patients with long-lasting ENT surgery
  - Half of patients had a history of alcohol consumption
  - From the patients in the substitution programme, none developed severe withdrawal symptoms
  - Maximum daily Lorazepam dose was 9 mg
Conclusions

- Nurse led inter-professional and interdisciplinary approach was feasible
- Nurses were able to manage withdrawal symptoms without any complication

Limitations:
- Retrospective design
- No subsequent programme to support / initiate weaning off treatment
Take home messages

- Alcohol use disorder is not only a psychological disease but also a severe alteration of the neurochemistry in the brain.
- To avoid progression of the disease withdrawal should be prevented.
- In (protracted) abstinence professional support should be offered (weaning off treatment).
- Brain protection measures such as the use of NMDA receptor antagonists (Acamprosate) should be expanded.