Workshop

Exposure and Response prevention in children and adults

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Behavioural model of tics

Environment
external & internal

Brain/ physiology

Behaviour therapy:
Habit Reversal & Exposure therapy

Tics

Medication
Deep Brain Stimulation
What is the main focus of attention?

- **If treatment of tics:**
  - ER/HR
  - Relaxation training
  - Function based interventions

- **If treatment of comorbid conditions:**
  - OCD: behaviour therapy (ER/ cognitive interventions)
  - Impulse control disorders: selfcontrol management
  - ADHD: medication, behaviour therapy

- **If “learning to live with TS”:**
  - Learning adequate coping strategies
  - Cognitive therapy
  - Social skills training
  - Patient organizations (TSA)
Protocol: THERAPIST MANUAL

- Introduction

- Chapter 1: Exposure and Response prevention
  - 12 sessions and evaluation

- Chapter 2: Habit Reversal
  - 10 sessions and evaluation

- Chapter 3: Additional interventions
  - Function-based interventions
  - Breathing and relaxation exercises

- Chapter 4: Relapse prevention
  - Making a keep-the-tics-away-plan

- Several extra’s:
  - Improvement thermometer
  - Homework registration sheets
  - Session registration sheets
  - Tic-alert thermometer
  - Overview of tics and competing responses
  - Tic certificate
• Chapter 1: Information about tics
  • Appendix 1: Oral presentation about tics
  • Appendix 2: Information for school
  • Appendix 3: If things get too touch

• Chapter 2: Suppressing tics

• Chapter 3: Using a competing response

• Chapter 4: Additional help for remaining tics
  • Are there situations in which tics still often occur?
  • Breathing and relaxation exercises

• Chapter 5: Keep the tics away
• Introduction

• Information about tics and tic disorders

• Information about treatment
  • Exposure and Response prevention
  • Habit Reversal
  • 15 minutes tic frequency recording
  • Helping with practice and giving rewards

• Additional help for remaining tics
  • Are there situations in which tics still often occur?
  • Breathing and relaxation exercises
To start with…

- Start with psychoeducation!

- Tic frequency recording by a parent/partner of the patient
  - During a fixed time period/activity
  - Daily
  - Point this out in a graph each session

- Motivational strategies:
  - Reward system
  - What to do on a “bad day”

- If bothered in classroom:
  - Give information to school
  - Consider an oral presentation

![Graph showing tics over weeks]
Exposure and Response prevention (ER)
Premonitory urges

• Research: most TS patients feel premonitory urges

• Sensations are mainly in the head, shoulders, throat, hands, stomach, upper legs and feet

• The awareness of urges start about 3 years after the beginning of tics

• Older children and adolescents report more sensations than younger children (Banaschewski et al., 2003): 34% 8-10 years old; 56% 11-14 years old; 68% 15-19 years old

• Video Lennart
Exposure and Response prevention (ER)

- **Theory:** (negative) reinforcement

<table>
<thead>
<tr>
<th>STIMULUS</th>
<th>RESPONSE</th>
<th>CONSEQUENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Premonitory urge</td>
<td>Tic</td>
<td>Relief</td>
</tr>
</tbody>
</table>

- ER is based on breaking the association
- Is it possible to habituate to the urge?

- **Intervention:** prolonged exposure to the sensations while suppressing tics
Protocol ER

- 2 practice sessions: training response prevention
- 10 sessions in which exposure is “added” to response prevention
- Preferably weekly sessions
- Duration of sessions: 1-2 hours
Practice sessions (Response prevention)

• Press the button on the stopwatch; ask the child to suppress all tics from that moment onwards

• Give lots of encouragement and feedback about the amount of time that has passed

• Stop the time as soon as a tic is expressed

• Encourage the child to beat its earlier times: set new records!

• If the same tic is seen three times in a row, ask the child to concentrate on that particular tic until it is capable of suppressing the particular tic for at least five minutes

• Reward the child for a practice well done with a sticker or a checkmark in its workbook

• Video Eva
Adding exposure

- Explain the rationale: mosquito bite

- Press the button on the stopwatch; ask the child to suppress all tics from that moment onwards

- Ask the child to focus on the tic-alerts, try to make them more intense, without expressing a tic

- If no tic-alerts are present:
  - Imagine a situation in which the child has many tics
  - Let the child bring tic-eliciting objects in the session

- Give lots of compliments and encouragement

- Reward for good practice with a sticker or smiley

- Video Laura & Willem
Habituation

- Identify premonitory urges (tic-alerts) of the 5 most prominent tics
- Ask for the severity of tic-alerts every 15 minutes (scale 0-4)
- Make use of the tic alert thermometer
- Plot the SUD-scores in a graph
- High scores at the beginning of the session and low scores at the end of the session: within session habituation
- High scores in the first sessions and low scores in the last sessions: between session habituation
- Write down every expressed tic: it can influence habituation
## Subjective Units of Distress (SUD, Lennart ER 2)

<table>
<thead>
<tr>
<th>Ticalerts:</th>
<th>Minutes:</th>
<th>0</th>
<th>5</th>
<th>10</th>
<th>15</th>
<th>30</th>
<th>45</th>
<th>60</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Hamster feet (widen nostrils)</strong></td>
<td></td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td><strong>2. Mouse around feet</strong></td>
<td></td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>(turn feet)</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>3. Elephant on shoulder</strong></td>
<td></td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>(stiff arm)</td>
<td></td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>4. Little boxers</strong></td>
<td></td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>(rise eyebrows)</td>
<td></td>
<td>5</td>
<td>7</td>
<td>10</td>
<td>7</td>
<td>10</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total score:</strong></td>
<td></td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>9</td>
<td>6</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td><strong>Number of tics:</strong></td>
<td></td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>9</td>
<td>6</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>
Graph of SUD scores (Lennart)

Lennart session 2

SUD-scores vs. minutes
Relapse prevention

• Keep-the-tics-away-plan
  – In what situations could tics come up again?
  – What signs are there that tics may be coming back?
  – What are you going to do if this happens*
  – Who are you going to ask to help you?
  – At what point you will get back into contact with your therapist?

• Examples ER
  – Concentrate on tics/ tic-alerts twice a week 20 minutes
  – New tics/ increase of tics: registration
  – Restart daily practice of ER
  – Make an appointment if professional help is necessary
Evaluate treatment

- Evaluate after 12 ER sessions:
  - <50% improvement: continue treatment
    - Many different tics/ premonitory urges: continue with ER
    - Only simple tics remain/ no habituation can be found: switch to HR
  - 50-80% improvement: continue for a few sessions
  - Is additional help necessary for remaining tics in specific situations?
    - Function-based interventions
    - Breathing and relaxation exercises
  - Sufficient tic reduction: terminate treatment/ plan follow-up
    - Does the child feel in control?
    - Does the child have skills to prevent relapse?
Tic certificate

TIC CERTIFICATE

has done really well!

Congratulations!

Therapist

Date:
A controlled outcome study comparing ER with HR

Verdellen et al. (2004), Behaviour Research and Therapy

• Hypothesis:
  – Both ER and HR are effective in reducing tics
  – ER results in larger tic symptom reductions

• Method:
  – 43 TS patients: ER n=21 (do: n=2); HR n=22 (do: n=4)
  – Design: pre – ER 12 s/ HR 10 s – post
  – Instruments: YGTSS/ tic frequency (TF video, TF home)

• Results:
  – Sign tic reductions for ER and HR
  – No differences between conditions
  – Effect sizes: 1.42 ER / 1.06 HR (YGTSS)
  – Stable results at 3 month FU
## Results

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Condition</th>
<th>Pre M (SD)</th>
<th>Post M (SD)</th>
<th>ES</th>
<th>PPI&gt;30%</th>
</tr>
</thead>
<tbody>
<tr>
<td>YGTSS</td>
<td>ER</td>
<td>26.2 (7.6)</td>
<td>17.6 (7.6)</td>
<td>1.42</td>
<td>58%</td>
</tr>
<tr>
<td></td>
<td>HR</td>
<td>24.1 (7.2)</td>
<td>19.7 (9.3)</td>
<td>1.06</td>
<td>28%</td>
</tr>
<tr>
<td>TF 15 m VIDEO</td>
<td>ER</td>
<td>139.7 (133.3)</td>
<td>79.5 (114.9)</td>
<td>0.90</td>
<td>74%</td>
</tr>
<tr>
<td></td>
<td>HR</td>
<td>151.1 (158.4)</td>
<td>102.7 (98.7)</td>
<td>0.47</td>
<td>53%</td>
</tr>
<tr>
<td>TF 15 m HOME</td>
<td>ER</td>
<td>88.4 (90.3)</td>
<td>28.4 (33.7)</td>
<td>0.88</td>
<td>89%</td>
</tr>
<tr>
<td></td>
<td>HR</td>
<td>116.9 (131.6)</td>
<td>36.9 (55.1)</td>
<td>0.73</td>
<td>72%</td>
</tr>
</tbody>
</table>
Habituation of premonitory sensations during ER

Verdellen et al. (2008), Behavior Modification

• Hypothesis:
  – Within-session habituation
  – Between-session habituation
  – Relationship with ability to suppress tics

• Method:
  – 19 TS patients (do: n=1)
  – 5 premonitory sensations: severity 0-20 (SUD-score)
  – SUDs at 15-minute intervals during 2-hour ER sessions
  – Ten weekly sessions

• Results:
  – Sign reductions of SUDs within sessions
  – Sign reductions of SUDs between sessions
  – Relationship between SUDs and tic suppression, within sessions and between sessions
Within-session habituation

SUD-scores vs. minutes

- Scores decrease over time.
- Data points show a linear trend.

Graph illustrates the decrease in SUD scores over a 120-minute session.
Between session habituation and interaction with tics

Average SUD scores over sessions for tics = 0 and tics > 25.
Within sessions habituation and interaction with tics.
The rebound phenomenon reconsidered

Verdellen et al. (2007), Movement Disorders

- **Hypothesis:**
  - ER tic suppression is not followed by an increase of tics above baseline level

- **Method:**
  - 20 TS patients (do: n=1)
  - TF video: 15 min pre – ER – 15 min post
  - TF home: 15 min 1-2 days before – ER – 15 min evening
  - Ten weekly 2-hour ER sessions

- **Results:**
  - No rebound effects (TF video/ TF home)
  - Indications for reduced tic frequency post-treatment compared to baseline (at the institute/ home)
Is there a rebound effect?

Institute: 15 minutes tic frequency
Is there a rebound effect?
Home: 15 minutes tic frequency

sessions

15 minutes home Tic frequency

- pre-session 2
- pre-session 1
- post-session
Concluding results

- No difference in effectivity between ER and HR, but....

- Habit Reversal:
  - ES: 0.73-1.06
  - >30% tic reduction: 28-72% patients

- Exposure and Response prevention:
  - ES: 0.88-1.42
  - >30% tic reduction: 58-89% patients

- Trend: ER more effective if more different tics

- No rebound following ER

- Indication for habituation within and between ER sessions