The webinar, “Clinical Features of REM Sleep Behavior Disorder in the Population-based CLSA Cohort: Can we improve the screening tools?,” will begin shortly.

For first-time WebEx users:

• This webinar will use VoIP only. Upon entering the session, you will be asked to join an integrated voice conference. Please select "yes". If you are not prompted with this message, please go to the main toolbar and select Audio>Integrated Audio Conference>Start Conference. If you continue to have audio issues, please go to Audio>Speaker/Microphone Audio Test.

• The only people in the session who can speak and be heard are the host and panelists.

• If you have questions/comments, you can type them into the chat box in the bottom right of the WebEx window. Ensure “All Participants” is selected from the dropdown menu before you press “send.” Mobile users must select “Chat with Everyone.” Questions will be visible to all attendees. You can type your questions at any point during the session, but they won’t be answered until the end of the presentation.

• At the conclusion of the webinar, please consider participating in our feedback poll and remember to exit the WebEx session.
CLSA Webinar Series

Clinical Features of REM Sleep Behavior Disorder in the Population-Based CLSA Cohort:
Can We Improve the Screening Tools?
Chun Yao, MSc, PhD Candidate at McGill University

12 pm to 1 pm ET | December 12, 2018

REM sleep behavior disorder (RBD), featured as acting out of dream, is the strongest known predictor for parkinsonism. It is estimated that idiopathic RBD patients have around 80-85% of phenoconversion rate to parkinsonism within five years, upon the first clinical visit. Since polysomnography sleep testing is expensive and time-consuming, several questionnaires were developed over the years to pre-screen for possible RBD patients in clinics. This webinar presents research that aims to improve the accuracy of RBD screening tools using the population-based cohort from the Canadian Longitudinal Study on Aging (CLSA).

Chun Yao is a PhD candidate in Neuroscience at McGill University. His work focuses primarily on studying the clinical features and disease progression in REM sleep behavior disorder under the supervision of Dr. Ronald B. Postuma. Chun completed his Master of Science in Chinese Medicine training in preventive medicine at China Medical University, Taiwan.

Webinars will be broadcast using WebEx. Further instructions will be sent by email.

Register online at: bit.ly/clsawebinars

www.clsae-lcva.ca
Clinical Features of REM Sleep Behavior Disorder in the CLSA:
Can we improve the screening tools?

Presenter: Chun Yao, *PhD Candidate*
PI: Ronald B. Postuma, *MD, MSc.*
Email: chun.yao@mail.mcgill.ca
1. Associated Factors of Possible REM Sleep Behavior Disorder (pRBD)

Goal:
Screening RBD and “checking” the risk factor association in population

2. Global Clinical Features of Possible REM Sleep Behavior Disorder

Goal:
To confirm the clinical presentations among RBD screened positives
What is REM Sleep Behavior Disorder?

Introduction

Case Definition

Results

Discussions

Acknowledgment

https://www.cartoonstock.com/directory/s/sleep-talk.asp
http://www.clipartpanda.com/clipart_images/hulk-fist-punch-clipart-70289757

Conversion Rate ~ 80%

Labeled-Jones Green Book I

MakeAGIF.com
Introduction

Case Definition

Results

Discussions

Acknowledgment

What is REM Sleep Behavior Disorder?

Conversion Rate ~ 80%

Male

Smoking

Married

Antidepressant

>40 y.o.
What is REM Sleep Behavior Disorder?

Introduction

Case Definition

Results

Discussions

So far, studies had shown us what RBD patients may look like in clinic.

But… who are these people endorsing RBD in a general population?

Male

Smoking

Married

Antidepressant

Conversion Rate ~ 80%

>40 y.o.

https://www.cartoonstock.com/directory/s/sleep-talk.asp
http://www.clipartpanda.com/clipart_images/hulk-fist-punch-clipart-70289757

Acknowledgment

https://www.youtube.com/watch?v=CTG5WCHlozw
http://www.freepik.com/free-icon/kick-boot_696486.htm
http://www.freepik.com/free-icon/kick-boot_696486.htm
RBD Diagnosis

- Loss of atonia during REM Sleep
- History of sleep-related injurious behaviors
- Absence of epileptiform activity during REM sleep (unless RBD can be distinguished)
- Sleep disturbance is not better explained by another disorder (ex. psychological disorders)
- Questionnaires can be used to screen pRBD in absence of polysomnography.

Introduction

REM sleep behavior disorder (RBD) was first described in humans in 1986 after a series of patients reported curious nocturnal behaviors that resulted in injury to patients or their bedpartners [1]. Due to the loss of normal REM sleep muscle atonia, RBD patients often "act out their dreams," most commonly expressing violent complex movements that often mirror dream content [1–10]. RBD patients are primarily divided into two groups: idiopathic RBD, with no obvious cause, and symptomatic RBD, which is primarily associated with synucleinopathy neurodegenerative disorders, including Parkinson’s disease (PD), Lewy body dementia (DLB), and multiple system atrophy (MSA) [3–12]. However, RBD is also common in patients with narcolepsy and in patients receiving antidepressant treatment and may be seen rarely in those with brainstem lesions in dorsal pons and medulla [10, 13–26]. In addition, RBD has also been associated with the withdrawal of drugs or alcohol, high chocolate intake and migraine headaches [27–31]. However, because up to 84% of idiopathic RBD patients develop parkinsonism or a clinical presentation resembling Parkinson’s disease, often preceding other characteristic neurological manifestations by several years [3, 5, 7, 8, 12, 32–37]. In addition, recent data suggest that up to 94% of patients with RBD patients confirmed by PSG, have synucleinopathy neurodegeneration at autopsy, furthering the presumption that RBD may represent the forme fruste of neurodegeneration in many patients [37].

Diagnosis and Classification of RBD

The minimal diagnostic criteria according to the International Classification of Sleep Disorders (ICSD) 2 include: (A) presence of REM sleep without atonia on PSG; (B) sleep-related injurious or potentially injurious disruptive behaviors by history, and/or abnormal REM sleep behaviors during PSG; (C) absence of epileptiform activity during REM sleep (unless RBD can be clearly distinguished from any concurrent REM sleep-related seizure disorder); and (D) sleep disturbance is not better explained by another disorder [38]. However, an evolving diagnostic standard for probable RBD (pRBD) for patients having dream enactment behaviors but who lack PSG evidence for RSWA (due to either unavailability of PSG or failure to record REM sleep) is included in ICSD 3, given the resource intensive nature of confirmatory PSG (38a).

The core clinical feature of RBD is a history of witnessed dream enactment by the patient’s bed partner, with or without recall of dream mentation by the patient himself or herself [1, 5, 11, 34, 39]. Patients are often able to vividly recall their dreams for weeks or longer, and when enacted dreams are recalled, patients typically report that their dream mentation contains a theme of being chased, or defense against an attack by animals or people [11, 40]. However, less aggressive themes such as playing sports or performing household chores are also common [41, 42]. Collateral history obtained from the patient’s bed partner is crucial in diagnosing RBD patients, since NREM parasomnias like sleepwalking or sleep terrors also often report frightening dream content. However, dreams of patients with sleep walking or sleep terrors more often involve natural disasters with a "fight" response, as opposed to the "flight" response reported by patients with RBD [5, 11, 39, 42, 43].
1. Associated Factors of Possible REM Sleep Behavior Disorder (pRBD)

Goal:
Screening RBD and “checking” the risk factor association in population

2. Global Clinical Features of Possible REM Sleep Behavior Disorder

Goal:
To confirm the clinical presentations among RBD screened positives
**Introduction**

**Case Definition**

- Single Question Questionnaire
- Excluding Self-reported PD & AD
- Excluding Apnea and Possible Sleep Walkers
- Sensitive Analysis

**Results**

- RBD N=30,097
- pRBD N=29,905
- Excluding Apnea and Possible Sleep Walkers
  - pRBD N=19,584
  - RBD + (N=958)
  - RBD - (N=18626)

**Discussions**

- 14 self-reported AD
- 44 self-reported PD
- 1386 screened positive for apnea
- 1529 had young onset (ie. possible sleep walkers)

**Acknowledgment**

Have you ever been told, or suspected yourself, that you seem to “act out your dreams” while asleep (for example, punching, flailing your arms in the air, making running movements, etc.)?
Sociodemographic Statuses

- Age: no differences
- **Men** were more likely to have pRBD.
- Subjects were more likely to be in any form of **long-term relationship**.
- pRBD is linked with **lower education level**.
  - Secondary School
  - Below Grade 11
- Subjects were more likely to be **retired**.
- pRBD subjects were negatively associated income level.

<table>
<thead>
<tr>
<th>Annual Income Level %</th>
<th>pRBD+ vs. pRBD-</th>
<th>Adjusted by age &amp; sex OR [95%CI]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 &lt; 20,000</td>
<td>2.45 vs. 2.51</td>
<td>0.86 [0.79, 0.93]</td>
</tr>
<tr>
<td>2 20-49,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 50-99,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 &gt; 100,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Life Style and Satisfaction of Life

Self-rated Health

- Healthy Aging
- Physical Health
- Mental Health

Healthy Control
- Social Sport
  - Healthy Control: 63.2±16.1 (days)
  - pRBD+: 54.3±93.7
  - No Difference

- Health Control
  - Social Sport
    - Healthy Control: 26.6±4.9 (days)
    - pRBD+: 25.0±26.0
    - No Difference

Healthy Control
- 4.6±0.9 (hrs/week)
- pRBD+: 4.3±4.5
- No Difference
### Risky Behaviors

#### Drinking Patterns:

<table>
<thead>
<tr>
<th></th>
<th>pRBD</th>
<th>Healthy Controls</th>
<th>OR [95%CI]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occasional Drinkers</td>
<td>97 (10.4%)</td>
<td>2325 (12.8%)</td>
<td>1.06[0.86, 1.31]</td>
</tr>
<tr>
<td>Regular Drinkers</td>
<td>730 (78.2%)</td>
<td>13701 (75.5%)</td>
<td>0.83[0.63, 1.10]</td>
</tr>
</tbody>
</table>

#### Binge Drinking Frequency:

- **>5 drinks per sitting/week for men**
- **>4 for women**

<table>
<thead>
<tr>
<th></th>
<th>pRBD</th>
<th>Healthy Controls</th>
<th>OR [95%CI]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.3±4.6</td>
<td>1.0±3.7 (day/week)</td>
<td>1.01[1.00, 1.03]</td>
</tr>
</tbody>
</table>

#### Moderate-heavy Drinking:

- **>14 drinks/week for males**
- **>7 drinks/week for females**

<table>
<thead>
<tr>
<th></th>
<th>pRBD</th>
<th>Healthy Controls</th>
<th>OR [95%CI]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>181 (18.9%)</td>
<td>2792 (14.3%)</td>
<td>1.38 [1.17, 1.63]</td>
</tr>
</tbody>
</table>
## Risky Behaviors

<table>
<thead>
<tr>
<th>Cigarette Pack-Years</th>
<th>pRBD</th>
<th>Healthy Control</th>
<th>OR [95%CI]</th>
</tr>
</thead>
<tbody>
<tr>
<td>pack years of smoking as packs/day x smoking years</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.4±14.7</td>
<td>6.1±12.2</td>
<td>1.008 [1.003, 1.013]</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>pRBD</th>
<th>Healthy Control</th>
<th>OR [95%CI]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never Daily Smoker [%]</td>
<td>462 (48.9)</td>
<td>10269 (56.2)</td>
<td>-</td>
</tr>
<tr>
<td>Ever Smoking</td>
<td>493 (51.6)</td>
<td>8235 (44.5)</td>
<td>1.28 [1.11, 1.48]</td>
</tr>
<tr>
<td>(reference = never daily smoker) (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Past Daily Smoker (%)</td>
<td>408 (42.7)</td>
<td>7060 (36.9)</td>
<td>1.25 [1.09, 1.44]</td>
</tr>
<tr>
<td>Current Daily Smoker (%)</td>
<td>85 (8.9)</td>
<td>1175 (6.4)</td>
<td>1.53 [1.20, 1.95]</td>
</tr>
</tbody>
</table>
### Mental Illness and Use of Antidepressants

**Kessler Psychological Distress Scale (K10)**

<table>
<thead>
<tr>
<th>Please tick the answer that is correct for you:</th>
<th>All of the time (score 5)</th>
<th>Most of the time (score 4)</th>
<th>Some of the time (score 3)</th>
<th>A little of the time (score 2)</th>
<th>None of the time (score 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. In the past 4 weeks, about how often did you feel tired out for no good reason?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. In the past 4 weeks, about how often did you feel nervous?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. In the past 4 weeks, about how often did you feel so nervous that nothing could calm you down?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. In the past 4 weeks, about how often did you feel hopeless?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. In the past 4 weeks, about how often did you feel restless or frigty?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. In the past 4 weeks, about how often did you feel so restless you could not sit still?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. In the past 4 weeks, about how often did you feel depressed?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. In the past 4 weeks, about how often did you feel that everything was an effort?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. In the past 4 weeks, about how often did you feel so sad that nothing could cheer you up?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. In the past 4 weeks, about how often did you feel worthless?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**pRBD** | **Healthy Controls** | **OR [95%CI]**
---|---|---
Score | 15.2±5.33 | 13.9±1.86 | 1.07 [1.05, 1.08]
≥24 | 87 (10.9%) | 1109 (6.6%) | 1.58 [1.43, 1.75]

**Antidepressants:**

128 (13.4%) | 1149 (6.2%) | 2.71 [2.22, 3.31]

*Australian and New Zealand Journal of Public Health (2001) 25, 494-497*
## Mental Illness and Use of Antidepressants

<table>
<thead>
<tr>
<th>Mental Illness %</th>
<th>pRBD</th>
<th>Healthy Control</th>
<th>OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>334 (34.9)</td>
<td>4086 (21.9)</td>
<td>2.17 (1.89, 2.50)</td>
</tr>
<tr>
<td>Mood Disorder %</td>
<td>226 (23.7)</td>
<td>2682 (14.5)</td>
<td>2.08 (1.77, 2.43)</td>
</tr>
<tr>
<td>Anxiety Disorder %</td>
<td>132 (13.8)</td>
<td>1355 (7.3)</td>
<td>2.24 (1.85, 2.72)</td>
</tr>
<tr>
<td>Depressive Disorder%</td>
<td>197 (20.7)</td>
<td>2569 (13.9)</td>
<td>1.84 (1.56, 2.17)</td>
</tr>
<tr>
<td>Post-Traumatic Stress Disorder + %</td>
<td>100 (10.5)</td>
<td>737 (3.98)</td>
<td>3.19 (2.55, 3.99)</td>
</tr>
</tbody>
</table>
Risk Factor Profile

- Male
- Mental Illness
- Long-term Relationship
- Education
- Antidepressant
- Retirement
- income
- Smoking
- Drinking

pRBD
Risk Factor Profile

Regression Model

- Age
- Sex
- Income
- Education
- Employment Status
- Smoking
- Drinking
- Mental Illness
Risk Factor Profile

Regression Model

- Age
- Sex
- Income
- Education
- Employment Status
- Smoking
- Drinking
- Mental Illness

Mental Illness

Antidepressant

Male

Long-term Relationship

Education

Income

Retirement

Smoking

Drinking

pRBD

19
Conclusion and Discussions

- **Men** were more likely to have pRBD.
- pRBD may be linked with **lower socioeconomical status**.
- Drinking and **Smoking** were both positively linked with pRBD.
- Use of antidepressant and **mental illness** were associated with pRBD.

- This is the first population and the largest study on REM sleep behaviour study.
- Like all large cohort study, we are unfortunately unable to obtain PSG data from each subject.
- Researchers and physicians may need to be aware of the **possible mental health issue** in pRBD subjects.
Table of Content

1. Associated Factors of Possible REM Sleep Behavior Disorder (pRBD)
   Goal: Screening RBD and “checking” the risk factor association in population

2. Global Clinical Features of Possible REM Sleep Behavior Disorder
   Goal: To confirm the clinical presentations among RBD screened positives
Which of these participants possibly have “TRUE” iRBD?

Czech: 63 / 2155 (2.92%)
Switzerland: 21 / 1,997 (1.05%)
South Korea: 7 / 348 (2.01%)
Spain: 4 / 539 (0.74%)

Using Gold Standard Diagnosis for the whole study

Sleep® 2018; pii: 4830023
Why to improve the screening accuracy in RBD?

Positive Rate: 3.2%
### Why to improve the screening accuracy in RBD?

**Introduction**

**Case Definition**

**Results**

**Discussions**

**Acknowledgment**

#### Assume that
1. RBD-xyzQ has SP & SN of:
2. RBD prevalence is 1%

<table>
<thead>
<tr>
<th>Status</th>
<th>Healthy</th>
<th>pRBD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative</td>
<td>True</td>
<td>False</td>
</tr>
<tr>
<td></td>
<td>Negative</td>
<td>Negative</td>
</tr>
<tr>
<td>Positive</td>
<td>False Positive</td>
<td>True Positive</td>
</tr>
</tbody>
</table>

**Sensitivity** = \( \frac{TP}{TP + FN} \)

**Specificity** = \( \frac{TN}{TN + FP} \)

**PPV** = \( \frac{TP}{TP + FP} \)
How does iRBD progress?

**Introduction**

**Case Definition**

**Results**

**Discussions**

**Acknowledgment**

---

![Diagram showing progression of iRBD phases](image)

- **Risk phase**
  - Markers
    - Genetic markers
    - Environment
    - Personality?
    - Substantia nigra hyper-echogenicity

- **Preclinical phase**
  - Markers
    - None yet validated
    - Blood, CSF and tissue biomarkers?
    - Imaging markers?
  - Neurodegeneration
  - Non-motor symptoms
  - Slight motor signs

- **Prodromal phase**
  - Clinical PD
  - >10 years

---

What are the differences between pRBD-Tanner vs. PD?

Introduction

Case Definition

Results

Discussions

Acknowledgment

**Tanner Questionnaire**
1. Resting Tremor
2. Micrographia
3. Trouble buttoning buttons
4. Microphonia
5. Gait Freeze
6. Festinating Gait
7. Poor Balance
8. Hypomimia
9. Trouble rising from chair

**Introduction**

pRBD: n=958
Control Group: n=18626

PD: n=124
PD + Tanner: n=1077
PD + Control: n=907
Tanner + pRBD: n=70
Tanner + Control: n=907

**Control Group:** n=18626
Healthy Controls: n=17719
What are the differences between pRBD-Tanner vs. PD?

### Tanner Questionnaire

<table>
<thead>
<tr>
<th>Item</th>
<th>pRBD Tanner+</th>
<th>PD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resting Tremor</td>
<td>21.7%</td>
<td>62.2%</td>
</tr>
<tr>
<td>Micrographia</td>
<td>38.6%</td>
<td>79.0%</td>
</tr>
<tr>
<td>Trouble buttoning buttons</td>
<td>50.0%</td>
<td>47.1%</td>
</tr>
<tr>
<td>Microphonia</td>
<td>37.1%</td>
<td>53.9%</td>
</tr>
<tr>
<td>Gait Freeze</td>
<td>4.3%</td>
<td>26.2%</td>
</tr>
<tr>
<td>Festinating Gait</td>
<td>47.1%</td>
<td>54.3%</td>
</tr>
<tr>
<td>Poor Balance</td>
<td>64.3%</td>
<td>56.9%</td>
</tr>
<tr>
<td>Hypomimia</td>
<td>35.8%</td>
<td>40.6%</td>
</tr>
<tr>
<td>Trouble rising from chair</td>
<td>54.3%</td>
<td>39.2%</td>
</tr>
</tbody>
</table>
What are the differences between pRBD-Tanner vs. PD?

<table>
<thead>
<tr>
<th>Tanner Questionnaire</th>
<th>pRBD Tanner+</th>
<th>PD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Resting Tremor</td>
<td>21.7%</td>
<td>62.2%</td>
</tr>
<tr>
<td>2. Micrographia</td>
<td>38.6%</td>
<td>79.0%</td>
</tr>
<tr>
<td>3. Trouble buttoning buttons</td>
<td>37.1%</td>
<td>53.9%</td>
</tr>
<tr>
<td>4. Microphonia</td>
<td>4.3%</td>
<td>26.2%</td>
</tr>
<tr>
<td>5. Gait Freeze</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Festinating Gait</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Poor Balance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Hypomimia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Trouble rising from chair</td>
<td>7.74 [2.58,33.49]</td>
<td></td>
</tr>
</tbody>
</table>

- pRBD Tanner+ 3.8±1.2
- PD 4.9±2.2
Poorer in Motor Functions and Postural Instability

**Introduction**

**Case Definition**

**Results**

<table>
<thead>
<tr>
<th>Healthy Control</th>
<th>pRBD</th>
<th>pRBD-Tanner</th>
<th>PD</th>
</tr>
</thead>
<tbody>
<tr>
<td>39.21±23.05</td>
<td>39.74±23.05</td>
<td>20.7±22.7</td>
<td>26.26±24.07</td>
</tr>
<tr>
<td>9.28±1.83</td>
<td>9.45±3.54</td>
<td>10.96±3.0</td>
<td>10.3±2.21</td>
</tr>
<tr>
<td>35.11±10.98</td>
<td>35.04±11.44</td>
<td>31.04±11.43</td>
<td>30.8±10.42</td>
</tr>
</tbody>
</table>

**Discussions**

**Acknowledgment**

https://www.fysiopartner.no/produkt/19502534/120605/jamar-plus-digital-handdynamometer/18169764/1
(Dzhagaryan, Milenkovic et al. 2015)
www.homefitness.com/tests/balance.htm
Insomnia as a Comorbid Sleep Disorder

The Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-5) and International Classification of Sleep Disorders, third edition (ICSD-3) define -

*insomnia disorder* as difficulty initiating or maintaining sleep on three or more nights per week for at least 3 months.
Insomnia as a Comorbid Sleep Disorder

Introduction

Case Definition

Results

Discussions

Acknowledgment

https://thepenal.com/wall-clocks/black-white-wall-clock.php
https://www.hercampus.com/school/butler/narcolepsy-told-gif
https://giphy.com/gifs/RbLhosb3cxhvy

Onset Insomnia

- Control: 14.6%
- pRBD: 20.1%
- pRBD–Tanner: 41.4%
- PD: 14.6%

6.65 ~ 6.85 hrs/night

Maintenance Insomnia

- Control: 27.9%
- pRBD: 23.8%
- pRBD–Tanner: 17.1%
- PD: 30.1%

No Difference Across the Board

2.04 [1.19, 3.85]
Insomnia as a Comorbid Sleep Disorder

Introduction

Case Definition

Results

Daytime Somnolence

Control: 6.7%
pRBD: 11.6%
**pRBD-Tanner: 21.4%**
PD: 18.5%

Only Worse than Control

Onset Insomnia

6.65 ~ 6.85 hrs/night

Control: 14.6%
pRBD: 20.1%
**pRBD-Tanner: 41.4%**
PD: 14.6%

2.04 [1.19, 3.85]

Maintenance Insomnia

Control: 27.9%
pRBD: 23.8%
**pRBD-Tanner: 17.1%**
PD: 30.1%

No Difference Across the Board

Acknowledgment

https://www.hercampus.com/school/butler/narcolepsy-told-gif
https://giphy.com/gifs/Rblhosb3xlvx
Worsen in Cognition

**Interference Error/Dot Error**
- Control: 1.61±1.88
- pRBD: 1.74±2.28
  **pRBD-Tanner: 2.17±2.58**
- PD: 2.29±3.32

**Mean FAS Score**
- Control: 13.2±4.3
- pRBD: 13.2±4.2
  **pRBD-Tanner: 11.3±4.3**
- PD: 12.3±4.7

**Mean Animal Naming**
- Control: 20.5±6.0
- pRBD: 20.4±6.0
  **pRBD-Tanner: 17.2±5.2**
- PD: 18.1±6.0

**Delayed Recall Score**
- Control: 4.11±2.0
- pRBD: 4.02±2.12
  **pRBD-Tanner: 3.18±1.87**
- PD: 2.80±2.11

**Total Score < 14**
- Control: 2.8%
- pRBD: 2.8%
  **pRBD-Tanner: 11.8%**
- PD: 4.9%
Increase in the occurrence of Psychiatric Events

**Case Definition**

**Results**

- **pRBD:** 1.07 [1.05, 1.08]
- **pRBD-Tanner:** 8.40 [4.18, 16.03]
- **PD:** 3.78 [2.06, 6.42]

**Depression**

- **pRBD:** 2.24 [1.85, 2.72]
- **pRBD-Tanner:** 6.34 [3.55, 10.84]
- **PD:** 1.38 [0.58, 2.79]

**Anxiety**

- **pRBD:** 1.84 [1.56, 2.17]
- **pRBD-Tanner:** 7.07 [4.29, 11.54]
- **PD:** 1.59 [0.87, 2.70]

**Depression**

Source: Kessler R, Professor of Health Care Policy, Harvard Medical School, Boston, USA.

This is a 10-item questionnaire intended to yield a global measure of distress based on questions about anxiety and depressive symptoms that a person has experienced in the most recent 4 week period.
Take Home Message & Future Plan

1. Even high specificity screens still have low PPV with uncommon diseases

2. Overall PPV of RBD-1Q ≤ 30%

3. pRBD–Tanner + ≈ true PD

4. However. without prospective, it is hard to be sure who really have RBD.

Missing prospective! Available next year.
Acknowledgement

Ronald Postuma
MD, MSc.

Seyed-Mohammad Fereshtehnejad
(aka. Sam) MD, MSc. MED, PhD

Benjamin K. Dawson
BSc., MS-Il

Christina Wolfson
PhD

Mark Keezer
MD, MSc.

Amélie Pelletier
PhD

Fund Source

Collaborators and Lab Members

Université de Montréal:
Jacques Y. Montplaisir MD PhD
Jean-Francois Gagnon PhD

McGill University:
Ziv Gan-Or MD, PhD

Postuma’s Lab:
Ahmed AlQassabi MD
Marie Corbeil
Sheida Zolfaghari MD

RI-MUHC:
Brain Program

Email: chun.yao@mail.mcgill.ca
Availability and quality assessment of genome-wide genetic data on 9,900 participants in the CLSA

Brent Richards, MD, MSc
Vince Forgetta, MSc, PhD

January 15, 2019 | 12 p.m. ET

Register: bit.ly/clsawebinars