Breathing pattern characteristics in refractory chronic cough patients

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Background

• Chronic cough is defined as a cough present for > 8 weeks duration\(^1\)

• High prevalence of chronic cough in Europe (11-13\%) \(^2\-7\)

• Main causes in people with a normal chest x-ray are\(^1\):

  - Asthma
  - Gastroesophageal reflux
  - Rhinitis
Background

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- High prevalence of chronic cough in Europe (11-13%) \(^2-7\)
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  - Asthma
  - Gastroesophageal reflux
  - Rhinitis

Refractory Chronic Cough

10-42% cases \(^8-10\)
• Cough suppression therapy (CST) has been found to be an effective treatment in reducing cough symptoms for refractory chronic cough\textsuperscript{10-12}
Background

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• CST consists of a package of treatment: \textsuperscript{10-13}
  ▪ Education
  ▪ Cough suppression techniques and \textit{breathing pattern retraining exercises}
  ▪ Vocal Hygiene and hydration techniques
  ▪ Psycho-educational counselling
Background

- Cough suppression therapy (CST) has been found to be an effective treatment in reducing cough symptoms for refractory chronic cough \(^{10-12}\)

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  - Vocal Hygiene and hydration techniques
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- Despite breathing pattern retraining exercises being included in CST little is known about the breathing pattern characteristics of people with refractory chronic cough.
Methods

- This study was completed as part of a larger multi-centred RCT “Efficacy of a Physiotherapy, Speech and Language Therapy Intervention (PSALTI) for patients with chronic cough: a randomised controlled trial”

<table>
<thead>
<tr>
<th>Inclusion Criteria</th>
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<td>Cough &gt;8 weeks, normal chest x-ray</td>
<td>Vocal cord malignancies, and active aspiration</td>
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<td>Minimal sputum production (&lt;10ml a day)</td>
<td>Upper respiratory tract in past 4 weeks</td>
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<td>Negative investigations and/or failed treatment trials for asthma, rhinitis and reflux</td>
<td>Current smokers</td>
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<td>Known Respiratory disease: lung cancer, pneumonia, pulmonary fibrosis, sarcoidosis, pleural effusion, bronchiectasis</td>
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Methods

• Breathing pattern was assessed in sitting, over 1 minute by one trained respiratory physiotherapist.

• Normal RR was defined as 12-16 bpm$^{14}$. 

• Route and region of most movement during breathing was also recorded.
## Results - Demographics

<table>
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<tr>
<th>Demographics</th>
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<tr>
<td>N</td>
<td>49</td>
</tr>
<tr>
<td>Male: Female</td>
<td>18 : 31</td>
</tr>
<tr>
<td>Age Mean(SD) years</td>
<td>56 (13)</td>
</tr>
<tr>
<td>Median Cough Duration (months)</td>
<td>66 (107)</td>
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Breathing Pattern characteristics

- 51% (n=25) had a predominant upper chest movement (UCM) breathing pattern.
- 31% (n=15) had increased RR (>16); 16% (n=8) had decreased RR (<12)
- Significant correlation between RR and breathing pattern ($r_s=0.3$, $p=0.038$)
- Significant difference in RR when participants with an increased UCM were compared to participants with abdominal movement (ABM) breathing pattern.
  
  \[
  \text{Median(IQR)} \quad \text{ABM} \ 13(5), \quad \text{UCM} \ 16(7) \ (p=0.04). 
  \]
- 96% were nose breathers
Conclusions

• High proportion of people with chronic cough have increased upper chest movement

• A 1/3 of our participants had increased respiratory rate

• Our findings provide some evidence to support the role of breathing pattern retraining exercises for people with chronic cough
Conclusions

• Further research is needed:
  
  • to investigate whether there is a relationship between breathing pattern characteristics and cough symptoms.
  
  • to investigate whether breathing pattern exercises included in CST are effective in changing people’s breathing patterns.
  
  • To investigate whether changes in breathing pattern effect cough symptoms in individuals.
Acknowledgement

• We would like to thank the Physiotherapy Research Foundation.


References


