Dysfunctional (yet functional) breathing pattern disorders

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Overview

- Definition and overview
- The ‘too hard basket’
- Typical and atypical signs and symptoms
- Assessment tips
- Treatment – multifactorial approach
- Who to refer to and how?
- Useful tips, apps and resources
- Take home messages
“Breathing which is unable to perform its various functions efficiently for the needs of the individual at that time”

Common definitions

Hyperventilation
• Breathing in excess of metabolic needs
  (Chaitow, Bradley & Gilbert, 2014)

Hyperventilation syndrome (i.e. collection of symptoms)
• Chronic condition associated with habitual over-breathing and somatic or psychological symptoms
  (Hough, 2017)

Breathing pattern disorders / dysfunctional breathing/breathing dysfunction
• Display divergent breathing patterns and have breathing problems that cannot be attributed to a specific medical diagnosis
  (Kiesal et al. 2017)
Breathing is:
- "a complicated dynamic process" and "a delicate balance" between systems (Ley, 200, 2 p. ix/x)

Inappropriate breathing can result from multiple sources
- Causes include altered:
  - Mechanics
  - Physiological/chemical
  - Psychological states
  - Combination of one/two/all

What does it look like?
- Dominant apical breathing pattern
- Altered inspiratory/expiratory ratio
- Noisy breathing /? multiple sighs
- ? Poor voice quality
• **Assessment is crucial**
  – Misdiagnosis is expensive (Chaitow, 2002)
  – Increases anxiety of patients/clients

• **Management is multi-dimensional**
  – Common aim to promote wellness
  – Requires a repertoire of tools and approaches
  – Cannot separate psychology from physiology and mechanics

• A significant burden to individuals and healthcare providers

• Growing numbers in youth and children

“A diagnosis begging for recognition”  (Magarian, 1982)
Historical perspective

• Ancient Greece
  – ‘hysterical suffocation’

• 1864 American Civil war
  – ‘muscular exhaustion of the heart’

• 1914 First World War
  – ‘Soldiers heart’

• 1988 ‘Designer jean’s syndrome’
• **BPDs can present:**
  – Acute, chronic, or acute on chronic
  – Can exist in isolation or on a background of other conditions
  – However ..... there is no organic disease process

• **BPDs can:**
  – Mask ‘A’ problem
  – Amplify ‘A’ problem
  – Be ‘THE’ problem
Typical and ‘atypical’ symptoms

- Chest pain
- Tight feelings in chest
- Palpitations
- Feeling tense / anxious
- Feeling confused
- Blurred vision
- Dizzy spells
- Tingling fingers
- Stiff fingers or arms
- Tight feelings round mouth

- Bloated feeling in stomach
  - Rumination / aerophagia
- Faster or deeper breathing
- Short of breath
- Unable to breathe deeply
- Undue breathlessness on exertion
- Altered voice
- Fatigue
  - “performing not at my best”
  - “… just not feeling right”
Prevalence in adults

• General population: 5-11% (Thomas, 2005)

• Female:male ratio: 7:2

• Children/youth:
  – 27% children with exercise-induced asthma found to have exercise-induced BPD (Seear et al., 2005)

• Asthma: 30% - 83%
  – Children: 5% of referrals to paed/youth asthma clinic had BPD (de Groot et al., 2013)
  – Children/youth: 18.6% of non-asthmatics and 55% of asthmatics identified as having BPD (Gridina et al., 2013)

• USA GP practices/surgeries: 10%
NIJMEGEN QUESTIONNAIRE

• Non-invasive test AND easily administered
  – 16 items
    • 3 relate to respiratory symptoms;
    • 13 peripheral and central neurovascular or general tension
      (Mitchell, Bacon & Moran, 2016)
  – Items scored 0-4 ie 0=never; 4 = very often

• Scores > than 23/64 indicate/suggestive of BPD
  – Normal values of:
    • 10/64 in European studies and 5/64 in Chinese studies
      (Courtney, Greenwood et al. 2011)
• Breath hold following normal exhalation
  – Normal: 32+ seconds
  – Most people with BPD < 12 seconds

• Altered posture
  – Tight trapezius muscle +/- trigger points

• Assessment of comorbidities
  – Respiratory, cardiac, ORL, psychological
Assessment

• Observation and listening
  – Blocked nose/mouth breathing
  – Dominant apical breathing pattern
  – Altered inspiratory/expiratory ratio
  – Excessive sighing
  – Altered voice quality
  – Running ‘out of puff’ when talking (or walking)
Breathing re-education

Progressive breathing retraining:
• Abdominal pattern and normal I:E ratio
• Optimal posture/altered mechanics
• Integrated with:
  - Voice management /core stability
  - Activity / exercise / performance / sport
• Consideration for:
  - Other physiotherapy-specific therapy ie airway clearance techniques, inspiratory muscle training
Additionally ....

• **Consideration of other ...**
  – Co-morbidities
  – Neck/back pain, deep neck muscle tension and posture
  – Weak:
    • Abdominals
    • Back muscles
    • Pelvic floor muscles
  – Ergonomics
  – Fitness, activity & exercise
  – Relaxation
  – Mood and quality of life questionnaires

• **Colleagues and skills ie psychologists, GPs, ORL etc**
Who to refer to and how?

- **Public**
  - Out-patient Respiratory Physiotherapy Department

- **Private**
  - Auckland:
    - NZ Respiratory and Sleep Institute
    - Breathing Works
    - Susan Lugton, Moving Well Physiotherapy

- **National**
  - The Lung Mechanic (Christchurch)
  - Buteyko Health New Zealand
  - BradCliff Practitioners
  - Physiotherapy NZ website (cardio-respiratory physiotherapy)

- **University**
  - AUT Integrated Clinic, North Shore
  - University of Otago physiotherapy clinics

**Remember....**
Each physio/practice tends to have a slightly different focus, so like a good hairdresser or GP, patients need to find the best approach/person for them!
Useful resources (examples only)

**Books (e-books/hard copy)**
Self-help for hyperventilation (Bradley, D.)
Hyperventilation Syndrome: A Handbook (Bradley, D.)
Breathing Works for Asthma (Clifton-Smith, T.)

**Web-based resources:**
UK based physiotherapy resource (useful leaflets and videos):
http://www.physiotherapyforbpd.org.uk

UK based Breathe study (asthma) with useful videos:
http://www.breathestudy.co.uk/

Useful resources (examples only)

App-based resources (examples only):
- Breathing retraining: Breathe, Breathe+, Paced Breathing,
- Mindfulness/breathing: Stop, breathe, think (kids and adults), Smiling Mind

Caution ...
- Some resources ie apps/videos promote ‘deep breathing’ NOT normal quiet tidal volume breathing with correct inspiratory/expiratory ratio. For some people, this may amplify their symptoms.
- Nothing should replace a physiotherapy assessment!
Take home messages

• People can be ‘functional’ but ...
  ...... have ‘dysfunctional’ breathing
• Symptoms can be global, specific or ‘atypical’
• Typically investigations are ‘normal’
• What to do:
  – Complete a Nijmegen Questionnaire
  – Watch for:
    • Nasal congestion
    • Apical / noisy breathing pattern
    • Excessive sighing/poor voice
  – Reassure
  – Refer to physiotherapy
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