Common medically unexplained conditions (including PMS and fibromyalgia) and breathing pattern disorders ©2008

Leon Chaitow ND DO **www.leonchaitow.com**

Background

Personal experience, and enquiry, suggests that assessment of breathing pattern disorders (BPD), and the employment of breathing rehabilitation, is commonly ignored in management of people with medically unexplained conditions, often involving multiple complex vague symptoms - or conditions such as fibromyalgia syndrome (FMS).

This may have much to do with a lack of appreciation amongst complementary, and mainstream practitioners, of the wide range of influences that disturbed breathing patterns have.

Beales[1] has summarised the problems of managing such patients where there is no obvious organic cause:

"*Katon and Walker[2] estimate that 14 common physical symptoms are responsible for almost half of all primary care visits. Yet over a one-year period, only about 10%–15% of these symptoms are found to be caused by an organic illness. Abdominal pain, chest pain, headache, and back pain are commonly found to be medically unexplained. Primary care physicians find patients with medically unexplained symptoms frustrating, and these patients tend to be frequent attenders, who account for a disproportionate amount of healthcare resources ……..Reid et al[3] examined the records of the 361 patients who attended outpatients most frequently (ie the top 5%). In 208 of the 971 consultation episodes, after full investigation, their symptoms were medically unexplained.*"

It is suggested that there is ample evidence that many of the symptoms in such patients may be caused, aggravated and/or maintained by the biochemical, biomechanical and psychological effects of breathing pattern disorders.[4]

Over-breathing (aka breathing pattern disorders - BPD, the extreme of which is hyperventilation), is largely a female problem, that can result in a complex array of symptoms - ranging from cardiovascular, to digestive, emotional, musculoskeletal and more, including fatigue, 'brain-fog' and profound disturbance of levels of systemic calcium and others nutrients. [5]

CO2 loss and alkalosis

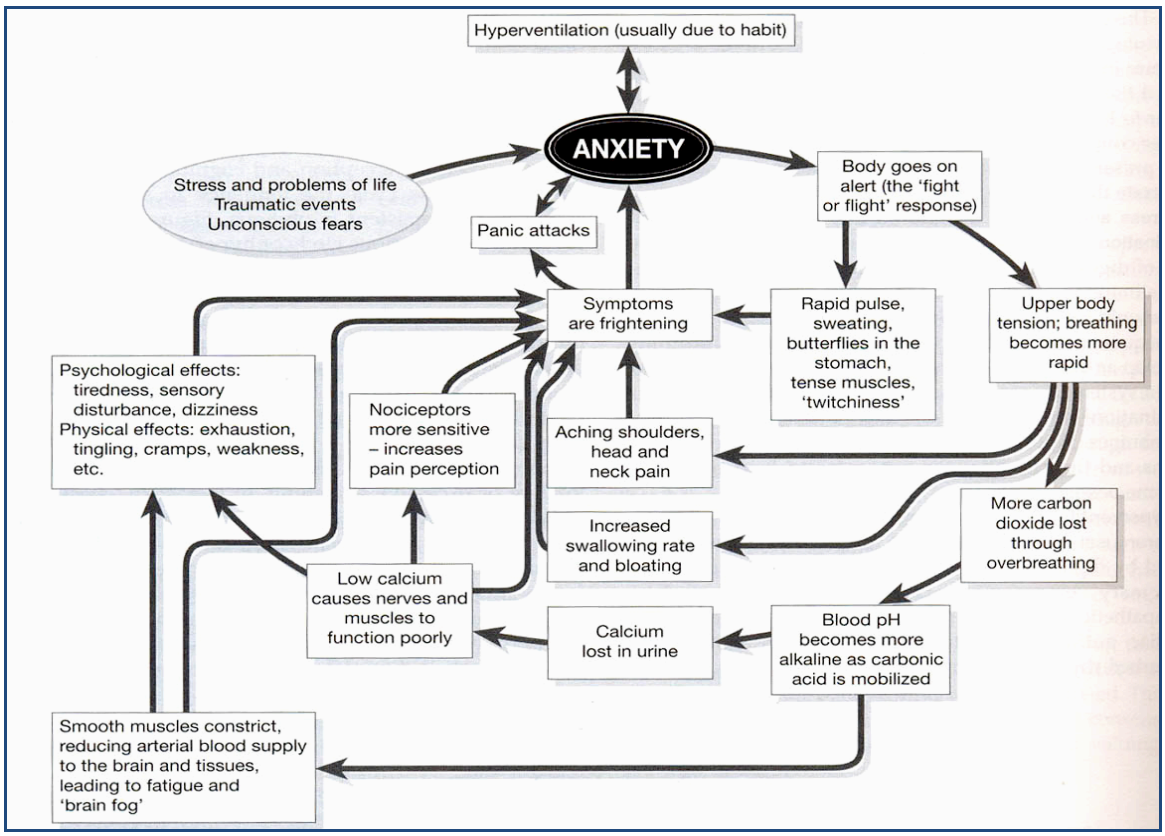
The most immediate aspect of over-breathing involves excessive exhalation of carbon-dioxide (CO2), which in turn depletes carbonic acid levels, producing an increase in alkalinity of the blood.

During hyperventilation blood pH rises (normal is ±7.4), creating respiratory alkalosis.[6]

With the onset of respiratory alkalosis there is an immediate disruption in the acid-base equilibrium (as bicarbonate is excreted in a homeostatic attempt to normalise pH), triggering a chain of systemic physiological changes, many of which have adverse implications for musculoskeletal and general health . There are as a result negative effects on balance,[7] motor control,[8] pain thresholds[9] and autonomic imbalance, characterised by sympathetic arousal[10].

Symptoms as diverse as neck and head pain, chronic fatigue, anxiety and panic attacks, cardiovascular distress, gastrointestinal dysfunction, lowered pain threshold, spinal instability and hypertension (this is not a comprehensive listing) - may be directly caused, or more commonly aggravated and maintained, by breathing pattern disorders the most obvious example of which is hyperventilation.[11] [12]

See flowchart below



Gender differences - and the PMS and fibromyalgia connections

The female:male ratio of BPD occurrence has been suggested to range from 2:1 to 7:1 in different studies.

Relative to men, women have a higher rate of respiration which is exaggerated during the luteal phase of the menstrual cycle, largely by progesterone which encourages hyperventilation and hypocapnia.[13]

During the post ovulation/pre-menstrual phase, CO2 levels drop on average 25%. Additional stress can subsequently, "increase ventilation at a time when carbon dioxide levels are already low" leading directly to alkalosis. [14]

Ott et al have suggested that there is ample evidence that much of the symptom picture linked to PMS is caused directly by overbreathing.[15]

They note that:

"Although it has been known for more than 100 years that women hyperventilate during the second half of the menstrual cycle, hormonally induced changes in the

control of respiration have so far not been considered as part of the etiology of PMS. However, symptoms of the chronic hyperventilation syndrome are remarkably similar to the symptoms observed in some women with PMS."

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Hyperventilation (and its objective measure, hypocapnia - reduces serum CO_2) has also been associated with fibromyalgia syndrome (FMS).[16]

FMS often follows a fluctuant course affected by the menstrual cycle, during which pain sensitivity varies, even in healthy women. In a recent study it was noted that several participants "changed" FMS diagnosis during the course of a menstrual cycle, fulfilling the diagnostic criteria during the menstrual or luteal phase, but never during the follicular phase.[17]

How widespread?

The incidence of BPD in the general population has been variously estimated to be in a range of anything from 3.5% to 28%.[18]

A recent survey aimed at distinguishing between dysfunctional breathing in non-asthmatic adults found 29% of asthmatics (7% of the adult UK population) and 8% of non-asthmatic adults (93% of UK adult population) demonstrated BPDs. This represents 9.5% overall of the entire adult population who demonstrate dysfunctional breathing patterns that are capable of producing symptoms such as those described. It was noted that none of the people identified in the survey had previously received a diagnosis of dysfunctional breathing, nor had they received any treatment for it. This finding suggests that there exists a large and unmet need in the community, with people experiencing symptoms that may potentially be helped by a simple non-pharmacological (i.e. naturopathic) treatment.[19]

Conclusion

Breathing pattern disorders are common and are easily recognised, for example by means of the Nijmegen questionnaire which provides a non-invasive test of high sensitivity (up to 91%) and specificity (up to 95%). This easily administered, internationally validated, diagnostic questionnaire is the simplest, kindest, and to date, most accurate indicator of acute and chronic hyperventilation, apart from use of capnography which measures CO2 levels.[20] [21]

BPDs are usually capable of correction by means of retraining combined with manual therapy - and are largely ignored or go unrecognised by physicians, practitioners and therapists.

Intervention studies of breathing-retraining[22] have clearly demonstrated that non-pharmacological treatment can be used successfully to treat dysfunctional breathing in people with asthma, and without asthma. Indeed the vast majority of BPDs appear to be amenable to correction via a combination of breathing rehabilitation and manual/physical medicine modalities.. [23] [24]

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FURTHER READING SUGGESTIONS:

- **Chaitow L Bradley D Gilbert C 2002 Multidisciplinary Approaches to Breathing Pattern Disorders Churchill Livingstone/Elsevier Edinburgh**
- **Chaitow L Fibromyalgia Syndrome - a practitioner's guide to treatment 3rd edition Churchill Livingstone/Elsevier Edinburgh 2009**