Asthma and emotion

Early psychoanalytic approaches

Asthma = stifled cry for help
- Dependency
- Helplessness
- Passivity, depression
- Loss of protection/separation anxiety
- Overanxiety
- Lack of self-confidence

1970’s Research at National Jewish

1970’s Research at National Jewish


Interaction between panicogenic thoughts and asthma: Greater in PD subjects without asthma than with asthma

Therefore breathing patterns associated with asthma are probably responsible for some of the PD in asthma

Anxiety Sensitivity and Panic Attacks in Asthma

- Of 93 adult asthma patients, 23% reported panic attacks, with 9.7% meeting DSM-IIIR criteria
- 10 PD patients and 9 comorbid patients had higher Anxiety Sensitivity and Fear of Body Sensations than asthma patients without panic disorder.

PANIC SYMPTOMS IN ASTHMA AND PANIC DISORDER (Carr, Lehrer, & Hochron, 1992)

- Panic disorder: panic-fear symptoms are explained only by general anxiety level
- Asthma: panic-fear symptoms are explained only by dyspnea
- Panic disorder subjects report same respiratory symptom level as asthma patients, but show normal pulmonary function

Concomitants of asthma (I)

- Panic-fear
  - Asthma-related (Moderate = good prognosis)
  - Generalized (Bad prognosis)
  - Fatigue
  - Anger
  - Hyperventilation

10 PD patients and 9 comorbid patients had higher Anxiety Sensitivity and Fear of Body Sensations than asthma patients without panic disorder.
Recent Empirical Studies of Asthma Personality correlates

- Depression and anxiety (Asnaashari et al., 2012; Acosta-Perez et al., 2012; Shafee, 2011; Van Landeghem & Mercure, 2012; Lev-Yaw et al., 2007; Blackman & Gurka, 2007; Feldman et al., 2010; Guzik et al., 2010; Feldman et al., 2010)

- Particularly high panic disorder comorbidity (Chen & Lin, 2011; Goodwin et al., 2010; Deshmukh et al., 2007)

- Impulsiveness (Runeson et al., 2011; attention deficit (Shyu et al., 2012; Fasmer et al., 2011; Morgensen et al., 2011; Yuksel et al., 2008)

- Not genetic (by family history) (Biederman, et al., 1994)

Asthma patients with psychopathology show poorer asthma control

- Depression (Tzirakis et al., 2012; Masurak et al., 2012; Guglani et al., 2012; Tynan et al., 2012; Labor et al., 2012)

- Comorbid anxiety and depression (Wang et al., 2011; Mancio et al., 2011; DiMarco et al., 2010; Cravotta et al., 2012; Labor et al., 2012)

Possible causal connections

- Asthma ® anxiety and depression
  - Anxiety and depression develop later

- Anxiety and depression ® heightened autonomic reactivity, hence airway reactivity

- Anxiety and depression ® poorer self-care, hence worse asthma
  - Symptom confusion with panic; behavioral effects of emotional disorder
  - Worse asthma is frightening and depressing

Prenatal stress and asthma

- Bereavement, particularly death of spouse (Feinberg et al., 2011)

- Prenatal corticotropin-releasing hormone
  - Maternal stress in pregnancy ® greater immunoglobin and cytokine level in placental cord (Wright et al., 2010a,b; Tse et al., 2012)

  - Lower maternal SES related to infant wheezing (Feinberg et al., 2011)
  - Prenatal exposure to stress affects development of immune system (Wright, 2011)

Panic and asthma symptoms

OVERLAP
- Dyspnea
- Fear of dying
- Anxiety about symptoms
- Hyperventilation symptoms
  - Lightheadedness
  - Difficulty thinking
  - Palpitations
  - Sweating
  - Trembling
  - Paresthesias
- Chest tightness
- Nocturnal awakening by symptoms

NO OVERLAP (usually)
- Asthma
  - Coughing
  - Mucus congestion
  - Wheezing
  - Symptoms helped by albuterol
  - Allergen triggers
  - Decreased peak flow
- Panic
  - Frequent yawning and sighing
  - Symptoms exacerbated by albuterol
  - Stress triggers
Emotion-induced asthma

- Stress-induced asthma (40%)
  - Uncontrollable social stress (e.g., social stress)
  - Blood and gore
  - Passive stressor response (film, etc.)
- Stress-induced bronchodilation (Isenberg et al., 1992)
  - Mental arithmetic
  - Reaction time
  - Not while observing bloody movies
- Suggested asthma (40%)

Respiratory Sinus Arrhythmia:
Parasympathetic arousal during some stressors

Respiratory Impedance

Parasympathetic stress-response bias in asthma

- Parasympathetic arousal produces bronchoconstriction
- Asthma patients show parasympathetic response stereotypy

RSA Asthma vs. Healthy During Stress Tasks

/EFFECT OF LABORATORY STRESSORS ON PULMONARY FUNCTION IN DEFENSIVE AND NONDEFENSIVE ASTHMA PATIENTS/
### Psychophysiological Perspective on Emotion and Asthma

- Individual response stereotypy
- Vagal bias
- Influence of defensiveness

### BIOFEEDBACK EFFECTS

- Decreased pulmonary function during cold pressor test
- Interview about stressful asthma experiences
- Progressive muscle relaxation

Increased RSA during cold pressor test
- Progressive muscle relaxation

Passive coping stressors → increased vagal tone and poorer asthma control
Asthma Symptoms (From Daily Diaries)

Full Protocol
HRV Biofeedback Alone
Placebo Biofeedback
Waiting List

Biofeedback effects: DON’T KNOW THE MECHANISM

• Probably not baroreflex
• Decrease autonomic reactivity?
• Anti-inflammatory effect?
• Strategic use and mechanical effect?
• Decreased stress?