Respite Care - Medical Aspects

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The Relationship Between Stress and Illness

Why Respite?
Stress on Caretakers
Why Should Society Care?

Caretakers without Respite = Chronic Stress!!

Importance of Stress and Stress Response

Patients
  Relationship to illness and healing

Families
  Role of caretakers, decision makers

Definitions

Stress characterizes a discrepancy between the demands impinging on a person and the individual's potential responses to these demands

Acute stress - Major events which provoke the flight or fight response
Chronic stress - Cumulative load of minor stresses

Frequent Acute Stress

Normal stress response repeated over time
Exposure to a stress "dense" environment
Job related - air traffic controllers
Environmental - Inner city violence
Personal - Social/family disorganization
Research - Repeated elevations of blood pressure in primates in response to societal disorganization
accelerate atherosclerosis

Lack of Adaptation to Repeated Stress

Lack of adaptation to repeated stressors of the same type
Prolonged exposure to stress hormones
Function of individual's adaptive ability
Accounts for different responses to similar environmental stresses
Research: Stress hormones increases in some but not all individuals exposed to a repeated public speaking challenge
Natl 1995;57:468-74
**Prolonged stress response**

- Failure to turn off the Hypothalamic Pituitary axis and sympathetic activity after stress
- Function of individual responses and possibly aging
  - Research: Elevation of blood pressure fails to normalize in some individuals after acute arithmetic test. Garin, J. Hypertens 13:603-10

**Inadequate stress response**

- Inadequate responses by some stress response systems trigger compensatory increases in others
- If cortisol secretion in response to stress is inadequate secretion of inflammatory cytokines which are counterregulated by cortisol increases
  - Research: Rats genetically hyporesponsive to stress have increased susceptibility to autoimmune and inflammatory disturbances. (Stamberg, Proc Natl Acad Sci 1986;83:4771)

**Major Systems Affected by Stress and Stress Response**

- Hypothalamic Pituitary Adrenal Axis
- Cardiovascular
- Immunologic
- Neurologic
- Dermatologic

**Hypothalamic Pituitary Axis**

- Activation essential for successful adaptation to short-term stress
- Long term activation linked to increased cardiovascular disease, diabetes, hypertension, and cancer.

**Stress Induces Hypothalamic-Pituitary Axis (HPA) Activation**

- ↑ glucocorticoid levels
- ↑ serum glucose and lipid levels
- ↑ cardiovascular tone
- ↑ immunosuppression

**The Connection Between Stress and Illness**

- Animal models:
  - Disruption of the social hierarchy within a mouse colony caused increased aggression among cohorts of mice.
  - This was associated with activation of the HPA axis and reactivation of latent herpes simplex virus infection in 41.7% of the stressed mice, compared to none of the controls.
Immunologic Effects of Stress

In rats injected with mammary adenocarcinoma cells and subjected to stress:
- Tumor burden increased
- Leukocyte count decreased
- Total T cells and suppressor T cells decreased

- Stepinski A, 1985 Ca Res 45:1055:29-33

- Riley, Science, 1975; 189:465

The Connection Between Stress and Illness

- 80-100% of female mice of the C3H strain infected with the mammary tumor virus develop tumors within 8-18 months of birth, when studied under usual housing and experimental conditions.
- When groups of mice were provided with special housing and handling that reduced chronic stress, extended latency periods were seen before tumors developed.

Stress Obesity Connection

- Stress of social subordination in female monkeys has been shown to be associated with increased central fat deposition.
- Chronic uncontrollable stress resulted in increased adipocyte size and heavier fat pad in rats.
  - Klatzo-Schleis M, Peyschat Beter 52:361-368,1982

Stress and The Immune Response

- Human model: Chronically stressed populations, such as spousal caregivers of patients with Alzheimer’s disease.
  - Kolb, Proc Natl Acad Sci USA 1986; 83:3043-9
- Two recent studies measured the immune response to influenza vaccine
- Caregivers had poorer cellular and humoral immune responses than well matched controls.
  - Melzack, Lancet 1991; 337:627-631
The Connection Between Stress and Illness

- 394 healthy subjects completed a questionnaire assessing degree of psychological stress
- They were then given nasal drops containing one of five respiratory viruses
- Infection was defined by isolation of virus or an increase in virus-specific antibody.
  
  - Cohen et al, NEJM, 1991; 325:806-812

The Connection Between Stress and Illness

- In a second study, a life-stress interview replaced the questionnaire, allowing for specification of the type of stress associated with increased risk of infection
- Highest risk was associated with chronic events (more than a month), especially chronic social conflict, and under or unemployment.
  
  - Cohen et al, Health Psychol 1995; 14:224-233

The Connection Between Social Ties and Health

- Having more diverse social networks was associated with greater resistance to upper respiratory illness
- 276 healthy volunteers reported on the extent of their participation in 12 types of social ties (spouse, parent, friend, social group)
- Subjects were then given nasal drops containing 1 of 2 rhinoviruses, and monitored for development of a cold
  
  - Cohen et al, JAMA 1997;277:1940-4

The Connection Between Social Ties and Health

- Those with more types of social ties were less susceptible to common colds, produced less mucus and shed less virus.
- Susceptibility to colds decreased in a dose-response manner with increased diversity of the social network.
- There was a relative risk of 4.2 comparing persons with the fewest (1 to 3) to those with the most (>=6) types of social ties.

Cardiovascular Response to Stress

- Risk of heart attack increased in persons experiencing lack of control on the job
- Increased blood pressure and increased left ventricular mass index in persons experiencing high psychological demands and lack of control.

- L. Sanna BCA 1973;23:400-402
- N. G. Stagner, 1972;48:89-94
Central Nervous System Effects of Stress and Stress Response

II Acute stress increases cortisol secretion which suppresses the mechanisms in the hippocampus and temporal lobe involved in short term memory.
II Chronic repeated stress causes atrophy of dendrites of pyramidal hippocampal neurons.

The Connection Between Social Ties and Health

II 5,000 adults between ages of 30 and 69 completed a survey in 1965, assessing four types of social ties.
II Population was controlled for physical health, SES, smoking, activity, race etc.
II Being well integrated socially reduced all-cause age-adjusted mortality by half, over the following nine years.

Stress Reduction and Healing

II Recent randomized studies have shown an association of psychosocial support with longer survival for patients with breast cancer, malignant melanoma and lymphoma.
II Patients with psoriasis exposed to meditation training tapes showed more rapid healing of lesions.
- Kaber-Zimm et al, Psychosom Med, 1996;68:625

Stress Reduction and Healing

II 112 patients with either asthma or rheumatoid arthritis were randomly assigned to write about the most stressful events of their lives or about emotionally neutral topics.
II Asthma patients were evaluated with spirometry, arthritis patients by a rheumatologist, at 2 and 4 months.

Stress Reduction and Healing

II Asthma patients in the experimental group showed improvement in lung function (FEV1), controls showed none.
II Rheumatoid arthritis patients in the experimental group showed improvement in overall disease activity on a 4-point scale; controls showed no improvement. (P<.001)
- Snylly et al, JAMA 1999; 281:1204-9

Individual’s Response to Stress

II Genetic
II Individual’s perceptions of a situation
II Individual’s general state of physical health
Factors contributing to allostatic load

1. Anticipatory anxiety
   - Salivary cortisol levels increase within 30 minutes after waking in people who are under psychological stress due to work or family matters.
   - Stress hormones (cortisol)
2. Intrusive memories of a traumatic event (PTSD) can give rise to a physiologic stress response
   - Stress hormones (cortisol)
3. Coping behaviors which add to stress response like alcohol, inactivity, overeating.

Personal Manifestations of Stress

1. Body - Nausea, diarrhea, headache, colds, flu, malaise, change in appetite
2. Mind - Forgetting, having arguments, alcohol, drugs
3. Feelings - keyed up, anxious, irritable, depressed
4. Spirit - hopelessness, worthlessness, lack of meaning

Burnout

Burnout is a manifestation of increased allostatic load in response to stress

Burnout is characterized by three feelings

1. Emotional Exhaustion - feeling drained, not having anything to give even before the day begins
2. Depersonalization - feeling disconnected from other people, feeling resentful and seeing them negatively
3. Reduced Sense of Person Accomplishment - feeling ineffective, that the results achieved are not meaningful

Stages of Burnout

1. Stage 1 - Enthusiasm
2. Stage 2 - Stagnation OR overload
3. Stage 3 - Frustration
4. Stage 4 - Apathy

Burnout Quiz

1. Do you feel generally more fatigued and less energetic?
2. Do you feel less of a sense of satisfaction about your performance?
3. Are you working harder and harder but accomplishing less?
4. Do you feel more cynical and disenchanted with your work and the people at work?

Burnout Quiz (cont.)

1. Are you getting more irritable, angry, and short-tempered with people around you?
2. Are you seeing close friends and family members less frequently?
3. Are you having more than your share of physical complaints like aches, pains, headaches, colds, or the flu?
4. Do you feel that you just do not have anything more to give to people?

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Burnout Quiz Scoring

- Give one point to each question you answered yes.
- Greater than 2 points is early stage burnout.
- Greater than 6 points is burnout.

Relaxation Response

- The physiologic response which is in general the opposite of the stress response.
  - Increased parasympathetic activity
  - Decreased sympathetic activity
  - Decreased metabolism
  - Decreased heart rate, blood pressure, breathing rate
  - Oxygen consumption and cardiac output
  - Decreased muscular tension
  - Increased clotting time

Relaxation Response-Individual Strategies

- Meditation
- Prayer
- Massage
- Breathing
- Guided Imagery
- Focused walking
- Mindfulness

Relaxation Response-Group Strategies

- Family, social, community support
- Shared ritual
- Tai Chi class
- Nature walk
- Forgiveness
- 12-Step Fellowships
- Shared beauty

Lack of Respite = Stress!!

- Caretakers of close family members are among those with the highest amount of stress
- Chronic stress can lead to impaired immunity, cardiovascular disease and emotional exhaustion
- Caretakers need to care for themselves if they are to continue to care for others
Strategies to Relieve Stress

- Community support
- Social ties
- Relaxation activities – meditation, prayer, mindfulness, focused walking.
- Common denominator: Time, social support