MODULE 12: Adrenal Fatigue

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ADRENAL GLANDS: Two Organs In One
ADRENAL GLANDS

Short-term stress response

1. Glycogen broken down to glucose; increased blood glucose
2. Increased blood pressure
3. Increased breathing rate
4. Increased metabolic rate
5. Change in blood-flow patterns, leading to increased alertness and decreased digestive and kidney activity

Long-term stress response

**Mineralocorticoids**
1. Retention of sodium ions and water by kidneys
2. Increased blood volume and blood pressure

**Glucocorticoids**
1. Proteins and fats broken down and converted to glucose, leading to increased blood glucose
2. Immune system may be suppressed

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ADRENAL FATIGUE

Chronic fatigue
Low blood sugar (hypoglycemia)
Low blood pressure (hypotension)
Dizziness or lightheadedness upon standing
Muscle and/or joint pain
Recurrent infections
Allergies and/or asthma
Irregular menstrual cycles
ADRENAL FATIGUE

Infertility
Low libido
Headaches
Hair loss
Dry skin
Anxiety or panic attacks
Depression
Heart palpitations
Difficulty “bouncing back” from stress
Cold and heat intolerance
ADRENAL FATIGUE

Thyroid Connection
Estrogen Dominance
Allergies
DHEA
The Role of Diet
Vitamin C Supplementation
INTERNAL

Emotional
  Fear, anger, worry, sadness

Psychological
  Relationships, conflict between desires/beliefs, finances, negative attitudes, poor coping skills

Biochemical
  Hormone imbalances, hyper/hypoglycemia, poor dental/gingival health, acute and chronic illness, physical exertion
STRESS

EXTERNAL

Chemical
- Drugs
- Environmental toxins
  Most are endocrine disruptors

Biological
- Infections
Stressors are cumulative and additive

The greater the intensity of each stress, and the longer they last, the higher the cumulative allostatic load
ALLOSTATIC LOAD

Four conditions that lead to allostatic load are:

- Repeated frequency of stress responses to multiple novel stressors
- Failure to habituate to repeated stressors of the same kind
- Failure to turn off each stress response in a timely manner due to delayed shut down
- Inadequate response that leads to compensatory hyperactivity of other mediators
HEALTH EFFECTS OF STRESS

Clinical Manifestations

- Fatigue (94%)
- Nervousness/Irritability (86%)
- Premenstrual tension (85%)
- Salt craving (84%)
- Depression (79%)
- Chronic allergies (73%)
- Apprehension (71%)
- Chronic headache (68%)
- Weakness (65%)
- Lightheadedness (47%)
- Poor memory (42%)
- Insomnia (40%)
HEALTH EFFECTS OF STRESS

Diseases directly related to stress
  Fibromyalgia
  Chronic Fatigue Syndrome
  RA
  Autoimmune disorders
  CA, AIDS, Infarct, pneumonia survival
  Asthma, bronchitis
  Cirrhosis
  Obesity
SIGNS OF STRESS-ADRENAL RESPONSE

Environmental sensitivities, unresponsive hypothyroidism, slow/lack of recovery, persistently feeling unwell and overwhelmed, exercise intolerance, hypotension, salt craving, hypoglycemia, alternating constipation/diarrhea, frequent sighing, aggressive/negative language, morning fatigue

Hollow face, hair/skin eczema, hyperpigmentation, dark circles under eyes, weight gain early, weight loss late, wet palms, PM edema

Common sleep/wake cycle
- Tired at 8-10pm but resists going to bed
- Gets a 2\textsuperscript{nd} burst by 11pm often lasting until 1-2am
- Most refreshing sleep 7-9am
LIFESTYLE CHANGES

- Normalize sleep schedule
- Music therapy
- Dancing
- Sex
- Massage therapy
- Yoga
- Relaxation response exercises
- Identification of Good/Bad agents
- Assessment/Learning coping skills
- Avoidance of stimulants/drugs/ETOH
- Weight loss
- Clinical detoxification of endocrine disruptors
Avoid refined carbs
Increase proteins with healthy fats
Small, frequent meals; Never skip breakfast
Salt
Identify and remove food allergies
Foods high in B vitamins
Foods high in minerals
### Table 4. Summary of B Vitamins and Their Relationship to Stress

<table>
<thead>
<tr>
<th>B Vitamin</th>
<th>Function Regarding Stress</th>
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<tbody>
<tr>
<td>Thiamin (Vitamin B1)</td>
<td>Protective nutrient for the adrenals; decreases stress-induced cortisol response</td>
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<tr>
<td>Niacinamide (Vitamin B3)</td>
<td>Improves sleep quantity and quality; shunts tryptophan to serotonin</td>
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<tr>
<td>Pantethine/Pantothenic Acid (Vitamin B5)</td>
<td>Protective nutrient for the adrenals; decreases stress-induced cortisol response</td>
</tr>
<tr>
<td>Pyridoxal 5’phosphate (P5P; Vitamin B6)</td>
<td>Cofactor for synthesis of GABA, serotonin, and dopamine</td>
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<tr>
<td>Methylcobalamin (Vitamin B12)</td>
<td>Reset circadian rhythms for improved sleep and normalizing cortisol peak</td>
</tr>
<tr>
<td>5-Methyltetrahydrofolate (5-MTHF; Folate)</td>
<td>Regenerates BH4* essential for neurotransmitter formation (serotonin, dopamine, norepinephrine, epinephrine)</td>
</tr>
</tbody>
</table>
MORE ADRENAL SUPPORT

Biofeedback, EFT

Anti-inflammatory agents like turmeric

Nutraceuticals
  Magnesium, L-lysine with L-arginine, L-tryptophan

Botanicals
  *Passiflora, Withania, Hypericum, Valerian, Eschscholzia, Corydalis, Leonurus, Melissa, Cimicifuga, Humulus, Piper, Scutellaria*
PROGNOSIS

Must be compliant with diet/lifestyle changes

Mild
6-9 mos

Moderate
12-18 mos

Severe
15-24+ mos
Saliva Testing for Adrenal Insufficiency
References


Tangri, Ravi. What Stress Costs.


References


Wheatland R. Chronic ACTH autoantibodies are a significant pathological factor in the disruption of the hypothalamic-pituitary-adrenal axis in chronic fatigue syndrome, anorexia nervosa and major depression. Med Hypotheses. 2005;65(2):287-95.


