INTENSIVE
OSTEOPATHIC
UPDATE
VIRTUAL

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Osteopathic Treatment of Stress

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Learning objectives

- Describe the effects of stress and trauma on the body.
- Identify areas of somatic dysfunction as it relates to stress/trauma.
- Describe an osteopathic treatment plan to address these findings.
Stress

• More than ¾ of adults report physical or emotional symptoms of stress

• Nearly ½ of adults say they have laid awake at night because of stress in the prior month.

• Nearly 3 in 5 adults say they could have used more emotional support in the last year. ¹
What is it?

- Merriam-Webster:
  - a physical, chemical, or emotional factor that causes bodily or mental tension and may be a factor in disease causation

- 1936: Dr. Hans Selye
  - the non-specific response of the body to any demand for change
  - Rate of wear and tear on the body
  - Good vs bad stress

- Stressor/demand:
  - A situation or one’s perception of the situation as presenting demands that exceed one’s available resources to cope with the demand

(Marksberry, K. The American Institute of Stress)
Acute vs Chronic

• Acute stressor:
  • Stressor involving a brief, time-limited exposure.

• Chronic stressor:
  • Stressor involving a persistent and pervasive exposure to stressful event sequences.³
What contributes to stress?

• **Stress clustering:**
  • The magnification of an individual stress due to stressful events occurring together

• **Vicarious/secondary trauma:**
  • Stress experienced in response to trauma to a member of one’s close social network or as a function of exposure in the workplace.³
What happens to the body when faced with stress?

(Liyanarachchi, K. 2017)
headaches
Stress can trigger and intensify tension headaches.

heartburn
Stress increases the production of stomach acid, which could lead to heartburn or raise your risk of ulcers.

rapid breathing
When you're stressed, the muscles in your chest and throat tense up, which can cause you to breathe faster.

risk of heart attack
Over time, an increased heart rate and high blood pressure can damage your arteries, which can lead to a heart attack.

pounding heart
Stress hormones make your heart pump faster, so that blood can quickly reach your vital organs and cells.

fertility problems
Stress interferes with the reproductive system in both men and women, and may make it harder to conceive.

erectile dysfunction
You brain plays an important role in the process of getting an erection. Stress can interfere with this process.

missed periods
Fluctuating hormones can throw your menstrual cycle off, or in severe cases stop it altogether.

increased depression
Chronic stress can wear you down emotionally and lead to depression.

insomnia
Stress makes it harder to fall asleep and stay asleep, which can lead to insomnia.

weakened immune system
Long-term stress weakens your immune system's defenses, leaving you more vulnerable to infections.

high blood sugar
Stress causes your liver to release extra sugar into your bloodstream, which over time puts you at risk for type 2 diabetes.

high blood pressure
Stress hormones tighten blood vessels, which can raise your blood pressure.

stomachache
Stress affects your body's digestive system, which can lead to stomachaches, nausea, and other tummy troubles.

low sex drive
Stress -- and the fatigue that often comes with it -- can take a toll on your libido.

tense muscles
Stress makes muscles tense up, and chronic stress can lead to tense, irritated headaches and backaches.
Incidence of Stress Cardiomyopathy During the Coronavirus Disease 2019 Pandemic

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Ow.

STRESS

Ow

OW!

grrrrgggllll

STRESS

theAwkwardYeti.com
Stress Immune Response

Adipose tissue

Leptin

Foxp3⁺CD4⁺CD25⁺ Treg Cells

Th1 Cells

Vagus nerve

Celiac plexus

Splenic nerve

Norepinephrine

Ephinephrine

Dopamine

Cytokines (IL-1, TNF-α, IL-6, IL-2, IFN-γ)

Chemotaxis

Activation and proliferation

Phagocytosis

Degranulation

Chemotaxis

Activation and proliferation

Proinflammatory

Anti-inflammatory

(Procaccini C, 2014)
Allostasis

- Health as a state of responsiveness and optimal predictive fluctuation to adapt to the demands of the environment \(^{10}\)
Chronic Stress

- decreased resting glucocorticoid levels
- decreased glucocorticoid secretion in response to subsequent stress
- increased concentration of glucocorticoid receptors in the hippocampus
Long term sequelae

• ACE’s
  • Changes in nervous, endocrine, and immune systems → impaired cognitive, social and emotional functioning \(^{13}\)
  • Increased inflammatory biomarkers
  • Higher cardio-metabolic risk
  • Shortened telomere length
  • Change in epigenetic markers \(^{14}\)
• Higher rates depression and more persistent symptoms
• Increased Cancer rates and mortality \(^{3}\)

• Decreases in AL were significantly related to reductions in the risk of dying \(^{10}\)
So you mean to tell me a stress ball isn't for throwing at people who stress you out?
What about OMT?
Autonomics- Heart Rate Variability

- Fornari et al. 2017
  - faster recovery of heart rate and sympathovagal balance after an acute mental stressor by substantially dampening parasympathetic withdrawal and sympathetic prevalence.
  - prevented typical increase in cortisol levels observed immediately after a brief mental challenge
- Giles et al. 2013
  - Increased HRV and sympathovagal balance in favor of parasympathetic dominance
- Ruffini et al. 2015
  - increase of parasympathetic activity
Autonomics

• Henderson et al 2010
  • statistically significant decrease in α-amylase activity in rib-raising group, suggesting decreased sympathetic activity

**Figure 1.** Change in salivary β-amylase activity in participants receiving osteopathic manipulative treatment (OMT) and placebo. Values represent the mean percentage change in activity from baseline samples taken immediately preceding the procedure for each group.
Depression

- Plotkin et al. 2001
  - OMT group reverted to normal range of Zung Depression Scale while 70% of the control group still had signs of moderate depression

Figure 2. Effect of osteopathic manipulative treatment on depression. The effect of osteopathic manipulative treatment (treatment group; n=8) vs. structural examinations (control group; n = 9) on premenopausal women who had depression was assessed before and after an 8-week course of psychiatric counseling and antidepressant drug therapy (using paroxetine [Paxil] hydrochloride). Scores less than 50 = normal; * indicates significant difference, P < .001. Intragroup mean initial and final results were significantly different from each other, as were intergroup mean final Zung Depression Scale results.
• Hodge et al. 2010
  • LPT mobilizes leukocytes from GALT into lymph
• Hodge et al. 2011
  • studies using rats and dogs have shown that LPT increases:
    • the lymphatic uptake of antigens
    • thoracic and mesenteric lymph flow
    • the concentration of leukocytes in thoracic and mesenteric lymph
• Hodge 2012
  • LPT significantly enhanced the lymphatic flux of inflammatory mediators, which may enhance protection against infection by redistributing these mediators to other tissues

Figure 1  Thoracic lymph flow was measured in five conscious, surgically instrumented mongrel dogs before, during (between vertical dashed lines) and after abdominal LPT. Data are mean thoracic duct flow (mL/min) ± SE. Lymph flow increased significantly from baseline values during 5–30 s of abdominal LPT (P < 0.05). LPT, lymphatic pump treatments. Republished with permission from Knott EM, Tune JD, Stoll ST, Downey HF. Increased lymphatic flow in the thoracic duct during manipulative intervention. J Am Osteopath Assoc 2006;106:447–50
Immune

• Saggio et al. 2011
  • increase in postintervention slgA levels
  • slgA level for the experimental group increased an average of 139%, while the control group’s slgA level increased an average of only 32%

• Walkowski et al. 2014
  • OMT is able to induce a rapid change in the immunological profile of particular circulating cytokines and leukocytes.
Areas of Consideration

• Sympathetics
  • T1 - L2

• Parasympathetics
  • Cranium
  • OA, C2-3
  • Sacrum

• Fluids/lymph

• Diaphragm
Techniques

• OA decompression
• Rib raising
• Diaphragm
  • doming the diaphragm
• Thorax
  • HVLA, MFR of T-spine and ribs
• Sacrum
  • BLT
  • Sacral rocking
• Lymph pumps
OA decompression

- Physician uses index fingers to contact the occiput as near to the occipital condyles as possible.
  - Index fingers are reinforced with the middle fingers.
- Tension is applied toward the orbits to make firm contact with the occiput and constant traction is directed superiorly.
- Make minor adjustments in all three planes of motion (F/E, SB, R) to maintain ligamentous balance.
- Hold the point of balance until the release. ¹⁶
Rib Raising

• **Supine:**
  - Physician seated at side of pt with hands placed palm up, contacting the rib angles
  - Apply an anterolateral traction on the contacted rib angles by flexing the wrists to mobilize the costotransverse and costovertebral joints and engage the restrictive barrier
  - Continue in a rhythmic fashion until there is increased range of motion towards the physiological barrier.

• **Seated:**
  - Physician stands in front of pt, pt crosses arms and lays them over the Physicians shoulder
  - Physician reaches behind the patient with both arms to contact the rib angles medially with the finger pads as a fulcrum for extension of the patient's spine.
  - Apply an anterior-lateral traction on the contacted rib angles and extend the patient's spine by shifting your center of gravity posteriorly and pulling the patient towards you.¹⁶

(Hruby, R 2007)
Thoracic pump

- Physician stands at the head of the supine patient, placing both hands on the thoracic wall with the thenar eminence of each hand just distal to the respective clavicle, fingers spreading out over the chest wall.
- Induce a rhythmic pumping action by alternating pressure and release with the hands.
- Rate of the pumping should be approximately 110–120 times/minute.
- Continue until a palpatory sense of increased soft tissue compliance, decreased tissue congestion, is attained. 26
Liver and Splenic Pumps

• The patient is positioned in a left lateral recumbent position with the hips and knees flexed to stabilize the body.

• Physician places both hands on the lower thoracic cage with the right hand anteriorly, the left hand posteriorly, and the thumbs meeting in the axillary line.

• The patient takes a deep breath. As the patient exhales, the physician applies a vibratory motion with both hands to induce the pumping action to the liver.

• For the splenic pump, patient is in right lateral recumbent 26

(Hruby, R 2007)
Thank you!

NO STRESS

I GOT THIS
References


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