How Stress Affects Cardiovascular Health

Physical and Mental Stress

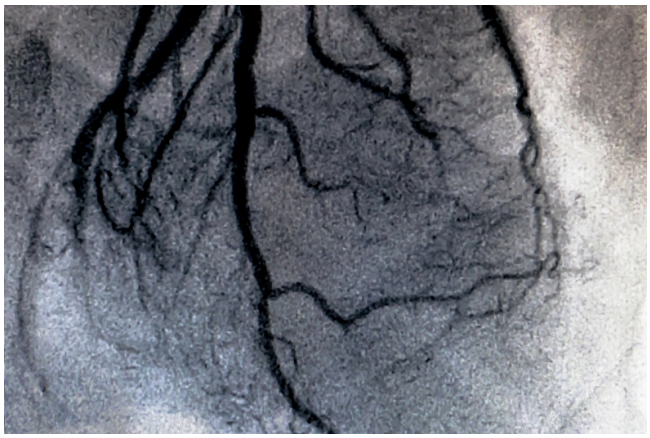
Stress is a psychological impact on our everyday lives. It occurs whenever a person feels overburdened or uncertain. For example, when you have a deadline and it feels like a burden and you are uncertain you will be able to reach that deadline. The correct response is to immediately attempt to fix the problem by doing all you can do in that moment and to carry that responsibility. The feeling is called stress. Stress impacts you psychologically and physically. Your mind and body.

Research has found that people that are worried about losing their job are nearly 20 percent more likely to have heart disease. “But people who are happy in their jobs may be chronically stressed as well because of the competitiveness of their jobs or because they’re trying to balance their work and home life.” - Johns Hopkins Medicine

The Human body is designed to experience and react to stress.

Stress responses help your body adapt to new situations. Stress can be positive and help a person stay alert, motivated, and ready to avoid danger. Stress becomes a problem when the challenge or change (stressor) produces a psychological and/or physical response.

The most prevalent extreme examples are -



responses to acute stress. For example, some who receive traumatic news are known to have increased heart rates, high blood pressure, and in rare cases, have suffered heart attacks.

A quote from Dr. Deepak Bhatt when a patient was enduring this kind of traumatic stress, "This isn't just an anxiety attack. When you do a cardiac catheterization procedure on them, an artery that was previously open is now closed."
- Dr. Deepak Bhatt.

This condition is known as
"broken heart syndrome" - Dr. Deepak Bhatt.

Another example is when a person experiences a flight or flight response from their (Old Reptillian Brain) where your body releases cortisol and epinephrine (adrenaline) which ready a person for action, fight or flight.

"Stress can decrease your lifespan by three to five years, and chronic stress can accelerate your aging by 10-15 years." Amit Sood, MD.

Physical Symptoms of Stress Include:

- Aches and Pains
- Chest Pain
- Increased Heart Rate
- High Blood Pressure
- Tiredness or Trouble Sleeping
- Headaches, dizziness, or shaking.
- Muscle Tension
- Weak Immune System

Psychological Symptoms of Stress Include:

- Anxiety or Irritability
- Depression
- Panic Attacks
- Sadness

Often these Symptoms cause unhealthy behaviors to develop, which include:

- Drinking
- Gambling
- Overeating
- Smoking
- Drug Use

Increased Heart Rate
Tachycardia (High Heart Rate) is when the heart rate exceeds 100bpm outside of exercise.

Tachycardia happens when the rate of blood flow becomes too rapid. Fast blood flow can pass against damaged endothelium (The interior lining of blood vessels), causing worse damage.
This friction is a condition that can lead to thrombosis (Blood clots within the vessels).

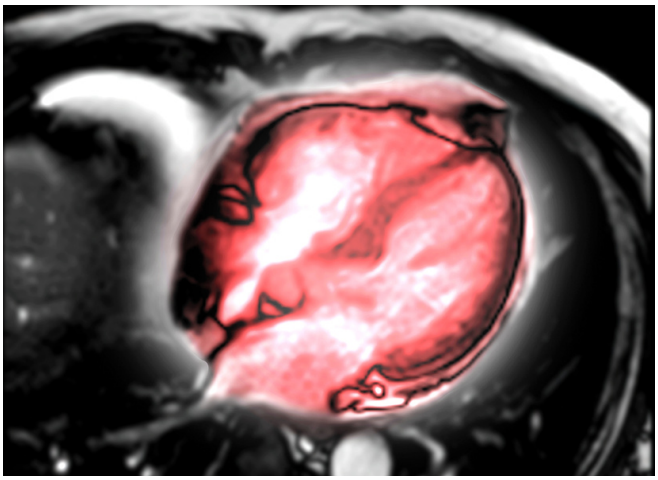
High Blood Pressure
Hypertension (High Blood Pressure) can cause excess strain and damage in the coronary arteries. High Blood Pressure can also allow the buildup of plaque which narrows the arteries. Plaque is fat, cholesterol, and other substances that narrow arteries and form clots.

High Blood Pressure is one of the most important risk factors for cardiovascular disease. Cardiovascular Disease is the number one cause of death in the United States.

"High Blood Pressure is a Silent Killer"
- American Heart Association

Heart Attack
A heart attack happens when the blood flow to the heart that delivers oxygen is severely reduced or completely cut off.
This happens because the coronary arteries that supply the heart muscle with oxygenated blood are narrowed or cut off by a buildup of plaque (fat, cholesterol, and other substances). This slow process is called atherosclerosis. When plaque in an artery breaks, a clot is formed around the plaque. This clot is what blocks the flow of blood to the heart muscle.

When heart muscle is starved of oxygen and nutrients, it is a condition called Ischemia. When damage to death of heart muscle occurs as a result of ischemia, it is called a heart attack or Myocardial Infarction (MI).



Ways to Manage Your Stress Include:

Staying Positive and getting a good laugh is known to lower stress, hormones, and inflammation while boosting the immune system and increasing the amount of Good Cholesterol (HDL).

“Life is what you make it.” - E. Roosevelt

Exercising allows you to direct your focus as a distraction to something productive. Exercise releases mood-boosting chemicals called endorphins. Physical activity not only melts away the stress, but it also protects a person from heart disease by lowering blood pressure, strengthening heart muscle, and helping you maintain a healthy weight.

Eating the right food, including more vegetables in your diet while cutting back on sugary and fatty foods is a focus to put the stress into. Replacing the cravings for chocolate with fruit, and chips with vegetables.

Unplugging from society can be effective at reducing stress and resetting your mindset. Taking any amount of time to avoid emails and news, listen to music, or reading a book is effective if you find the escape that works for you.

How Stress is Diagnosed

Stress is Identified and Diagnosed by their symptoms. For example, High Blood Pressure can be diagnosed and treated as a direct physical symptom.

Cardiovascular symptoms can be identified by an ECG. Atrial fibrillation (AFib) can be caused by stress. AFib is a rapid and irregular heart rate where the heart's two upper chambers (Atria) are out of sync with the heart's two lower chambers (Ventricles). Symptoms include heart palpitations, weakness, and shortness of breath. An ECG identifies this problem by calculating and displaying the irregular distance between heartbeats.
The Nasiff CardioCard ECG attempts to calculate and diagnose this problem automatically. Though an ECG should always be read by a professional thoroughly.

AFib has the potential to develop blood clots in the upper chambers (Atria) of the heart. If these blood clots form and break, the clot can be circulated to other organs in the body resulting in blocked blood flow (Ischemia).

Depressed ST ECG segments can suggest ischemia due to coronary artery disease.

ST elevations in V3 and V6 as well as ST segment depression in VR and V1 has been observed in patents enduring PVC's.

R wave elevation is common in patients diagnosed with LVH.

Tachycardia can be caused by sudden or prolonged stress. Tachycardia is the medical term for a heart rate that is over 100bpm and diagnosed due to conditions unrelated to normal physical stress. If left untreated, tachycardia can cause serious cardiovascular complications such as heart failure, stroke, and cardiac arrest. An ECG is used to diagnose tachycardia.

"A Full 12 Lead ECG will show if there are any signs of heart disease, define, and locate it. That information will help you identify the current cardiovascular state of your patients heart, and affect what diet or exercise program you may recommend to your patient. You will want to monitor your patient's heart alongside any programs you may recommend to your patient over time." - Roger E. Nasiff Ph.D.

Resources

Stress and Your Heart - **Harvard Health**

Stress - **The Cleveland Clinic**

How High Blood Pressure Can Lead to a Heart Attack - **American Heart Association**

High Blood Pressure and Cardiovascular Disease - **NCBI**

What is a Heart Attack - **American Heart Association**

Can Stress lead to a Heart Attack? - **Mayo Clinic**

Risk Factors for Heart Disease - **Hopkins Health**

Atrial Fibrillation and Managing Stress - **Mayo Clinic**

Atrial Fibrillation - **Mayo Clinic**

What is Atrial Fibrillation - **American Heart Association**

Stress and Cardiac Arrhythmias - **NCBI**

Tachycardia - **Mayo Clinic**

Can You Interpret the ECG Under Stress? - **NCBI**