The Canadian Medical

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June 2021

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Toronto Heart & Women's Health Center

STRESS + cardiovascular health

ECONOMY CLASS Syndrome

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"The forbidden love"

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Coronary Artery Disease

In Women

Editor in Chief

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Dr. Abdelwahab Arrazaghi, was born in Gharian, a mountain city in Libya, he started school in the capital city Tripoli, Libya. He completed his elementary school in Saudi Arabia and Spain where he travelled with his diplomatic family. He completed high school at Hay Al Andalus and joined the University of Tripoli Faculty of Medicine in 1984. He completed medical school in 1993 and travelled to Toronto to pursue his higher medical education at the University of Toronto, where he joined in the postgraduate program for internal medicine followed by adult cardiology program and Echocardiography fellowship.

He showed outstanding performance throughout his training years and was actively involved in teaching junior and senior medical residents at the University of Toronto internal medicine and cardiology program. He lectured on a regular basis on many topics in the internal medicine and cardiology grand rounds. Over all his presentations are known to be up to date, exciting and well organized. He was the only trainee ever to publish two medical books during his training years and was awarded for that by the Department for Cardiology at Toronto general hospital. He made the first 200 copies of his books free and delivered and distributed to the major hospitals in his homeland, Libya. Several copies were distributed to the major hospitals in Toronto, including Toronto general hospital, St. Michael's hospital and Sunnybrook Hospital.

Amongst his many other successors Dr. Arrazaghi has earned the title of one of the best leading physicians in the world alongside his recent nomination for the year 2020-2021 as one of three top rated cardiologists in Toronto. He is the creator and chief editor of *The Canadian Medical* magazine, a public magazine curated to empower the general popular with medical knowledge and realistic views on hot medical topics.

He initiated free teaching courses for the Canadian international medical physicians, where he provided review medical lectures, introductory courses to the North American health system and practical hands-on supervised patient interactions. He is a registered University of Toronto medical examiner for graduate and postgraduate medical programs. Furthermore, he is a certified director for the Advanced Life Cardiac Support program with the Heart & Stroke Foundation of Canada. Dr. Arrazaghi is known as an excellent medical lecturer and is involved in CME lectures to the medical community in Ontario, Canada.

He is currently the executive director of Toronto Heart and Women's Health Center located in Scarborough, Ontario. He is also the director and CEO of Richmond Hill Cardiac center, carrying more than 200,000 patients seen and managed by him.

He is patient advocate both nationally and internationally by helping patients to achieve the best of health. He facilitated the transfer of patients from different third world countries to receive treatments in both Canada and Europe. Dr. Arrazaghi is known to help the poor communities in Sudan, Palestine and Libya by sending medical equipment and medical supplies on a regular basis. He is known to be civil right advocate and an active member in Immensity International and Animal Rights group, and a member of the Canadian Race Relation Foundation, and active member of Islamic Relief Canada.

At a personal level, Dr. Arrazaghi is a loving father, son and husband. He has a never ending love of sports including; boxing, swimming, soccer and basketball. He has travelled to over 21 countries to explore nature and nations around the world and has a loving passion for connecting with his community.

Dr. Arrazaghi lives by the notion *"heart to heart"* offering care where it matters and devoting his life to helping others. He has offered not only medical care but an emotional connection with all his patients. Dr. Arrazaghi is a idol to his community, being that he came to Canada as an immigrant and has since created a successful foundation, his story inspires many like him to follow the path of passion.

HIS STRATEGY IN LIFE IS WHAT WAS NARRATED FROM THE PROPHET MOHAMMED (PPUH):

"PREPARE FOR YOUR LIFE AS IF YOU ARE TO LIVE FOREVER, AND PREPARE FOR THE DAY AFTER AS IF YOU ARE DYING TOMORROW."

JUNE 2021

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The Canadian Medical©

The Canadian Medical offers real facts and stories that uncover the truth behind many mainstream medically biased procedures, medications and trends that may harm the public health. We equip our readers with the information they need to to stay empowered in our constantly changing society. *Empowering the public with Medical Knowledge.*

The Canadian Medical

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Colour Formulations with Mindfulness.
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Formule Fond de Teint Haute Couvrance
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The Ordinary.
Natural Moisturizing Factors + HA
Surface Hydration Formula
Facteurs Naturels d'Hydratation + HA
Formule d'Hydratation de Surface

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BROKEN HEART SYNDROME

WRITTEN BY: RANA ZAKI, MD.

The stress experienced by an infinite number of people nowadays is unimaginable. The loss we experience daily is agonizing. However, the struggle we are in today is developing the strength we need for tomorrow. As the COVID-19 pandemic expands, the incidence of broken heart syndrome increases.

Broken heart syndrome (BHS) is a stress-induced weakening of the heart muscles. It is first described in Japan, characterized by a reversible postischemia insult causing a stunning of the heart muscles with a fast and full recovery in most cases. BHS goes by several names including stress cardiomyopathy, Gebrochenes-Herz syndrome, and Takotsubo cardiomyopathy. Takotsubo means an octopus trapping pot with a wide bottom and narrow neck in Japan.

Sudden and extensive stress may cause BHS. The widowhood effect is another name of BHS caused by the grief of a loved one's death. Good news may even be the cause; A case report of a 70 years old female with hypertrophic heart fainted at a wedding party which was diagnosed later as BHS. Intense fear as public speaking, recurrent nightmare, or even 3-dimensional (3D) entertainment may also be the cause. Extreme anger, severe physical pain, or medical conditions as systemic sclerosis have also been reported.

Notably, all the patients in the study tested negative for SARS-CoV-2 by the reverse transcriptase-polymerase chain reaction (RT-PCR) test. The pandemic's noxious effects on emotional and mental stress are more subjective and cannot be easily quantifiable. However, the older median age group is noticed in COVID-19 patients irrespective of cardiovascular comorbidities and gender. Patients who developed BHS with COVID-19 infection had a higher mortality rate, especially if they were complicated with cardiogenic shock.

BHS mostly affects women (about 88%), especially after menopause (mean age range 58 to 77). As it is the cause of 5% of women complaining from a heart attack. However, the differences are driven by racial disparities in demographics, comorbidities, as well as socioeconomic factors. Several theories have been proposed, including the female hormone estrogen protects against stress. As the level of estrogen declines with age, women might be more susceptible. In Japan, it is more common in men. Recurrent attacks of BHS have been reported in 5% of patients.

The mortality rate of BHS is extremely low (about 1%). In children, BHS is uncommon, even though it carries a mortality rate of 7%, there is no evidence suggesting that it is hereditary. Most children with BHS are adolescent males with psychiatric disorders or substance use disorders or both.

The exact cause is not fully understood. However, during the stress, your body releases hormones like adrenaline, noradrenaline. Researchers think that these hormones temporarily interfere with your heart's function.

Signs and symptoms of BHS include chest pain, shortness of breath, irregular heartbeats, and low blood pressure. In comparison to a panic attack, they do not cause physical damage to the heart muscle.

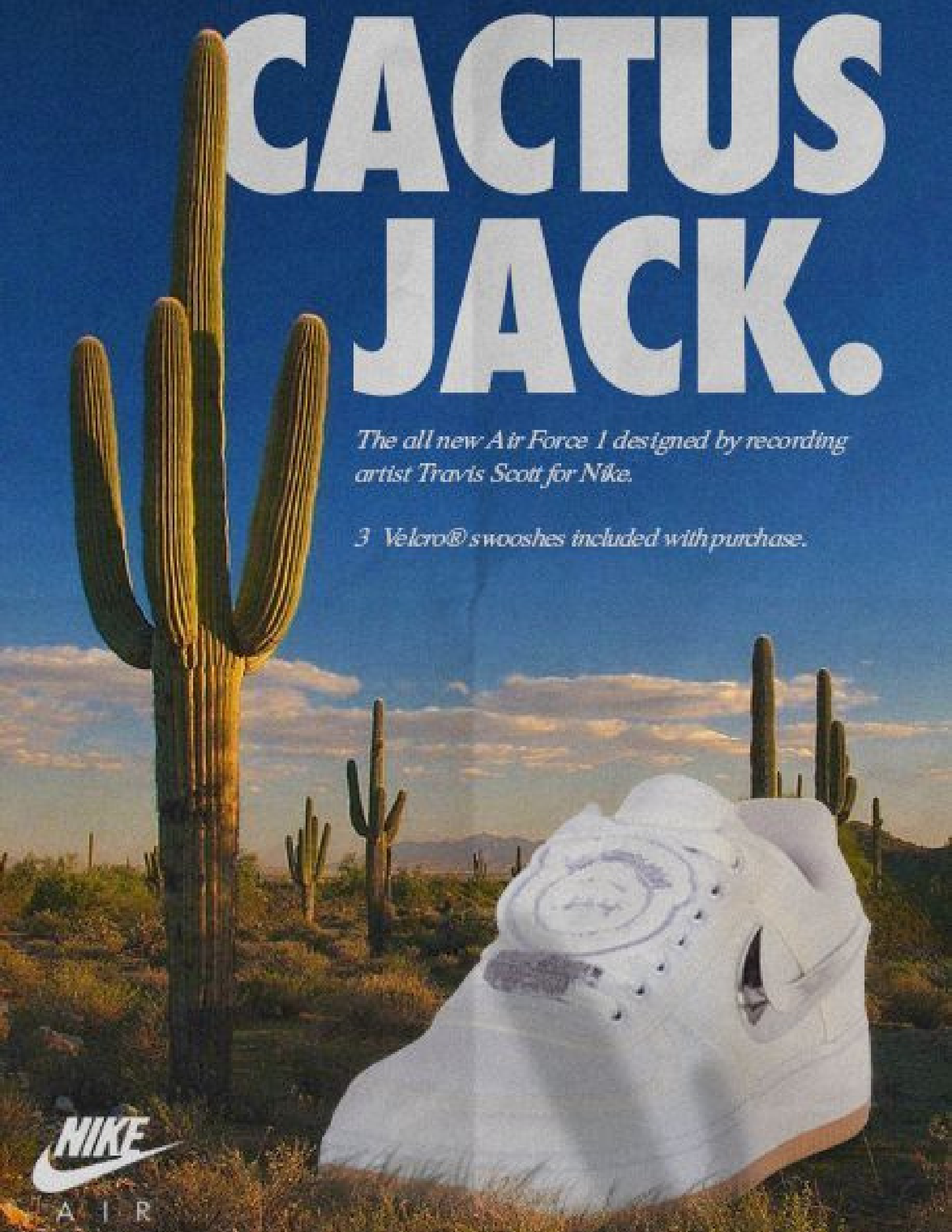
Nonetheless, unlike a heart attack, in BHS your heart muscle is not permanently damaged, and your coronary arteries are not blocked. Complications are rare, but those that have been reported include rupture of the heart wall, heart failure, or cardiogenic shock.
Several tests and imaging to diagnose BHS include mainly electrocardiogram, coronary angiography, echocardiography showing the ace of spades morphology of the ventricle.

Several types of Ventricular patterns are noticed. These include the midventricular, and focal wall motion patterns. A case with dextrocardia with situs inversus, another with biventricular affection have been reported. Therefore, it is important to screen the two ventricles for different patterns.

Treatment depends on the severity of your symptoms. Medical treatment includes antihypertensive and anti-anxiety drugs. Other approaches as preventive measures include yoga or meditation. Ask your healthcare provider for information on these methods and possible programs and services available. Moreover, generally healthy habits include a healthy diet and regular exercise may help.

The team of a no-kill animal shelter in Washington DC reported that some animals displayed some signs suggesting a BHS condition. These signs included eating rejection with curling in a corner of their cages hiding their heads in their paws. However, there is no medical evidence that indicates that pets suffer from the physical symptoms of BHS.

Moreover, people who have chest pain, no matter what the scene, must go to a hospital and have doctors further examine it. After all, Our bodies entail our responsibility.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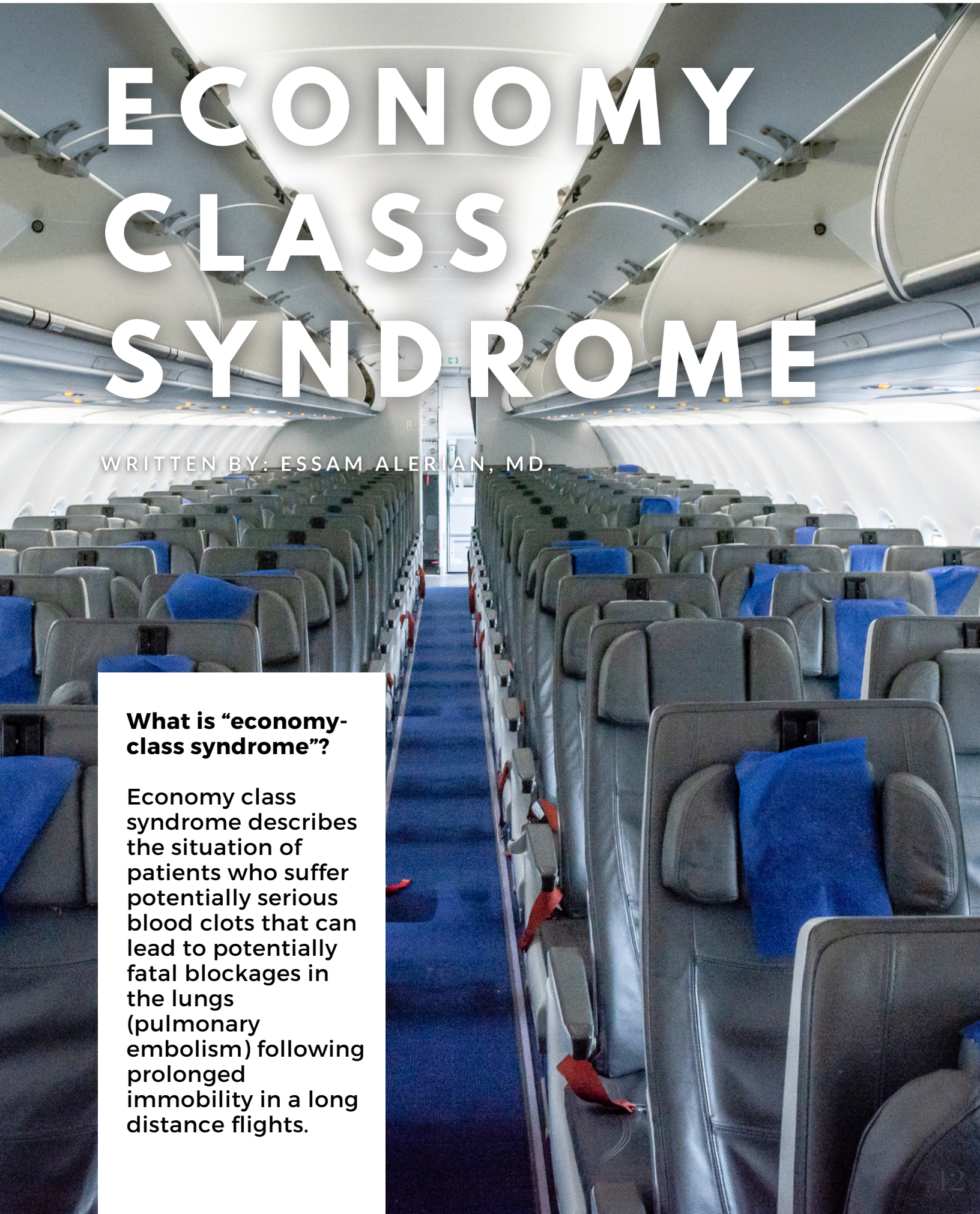

ECONOMY CLASS SYNDROME

WRITTEN BY: ESSAM ALERIAN, MD.

What is "economy-class syndrome"?

Economy class syndrome describes the situation of patients who suffer potentially serious blood clots that can lead to potentially fatal blockages in the lungs (pulmonary embolism) following prolonged immobility in a long distance flights.

What is Deep vein thrombosis (DVT)?

Deep vein thrombosis or DVT is when blood clots form in a deep vein , most commonly affects the leg veins or deep veins in the pelvis. It can cause pain and swelling in the leg but in some cases there may be no symptoms.

What is a pulmonary embolism (PE)?

A sudden blockage in a lung artery. It usually happens when a blood clot breaks loose and travels through the bloodstream to the lungs.

PE is a serious condition that can cause Permanent damage to the lungs ,low oxygen levels in your blood and damage to other organs in your body from not getting enough oxygen.

PE can be life-threatening, especially if a clot is large, or if there are many clots.

When was the economy class syndrome discovered?

The first reference to the association between immobility and the risk of deep vein thrombosis (DVT) dates from 1940 when cases of pulmonary embolism were reported in persons who had spent long periods of almost total immobility in subterranean air raid shelters during the bombing raids on London during WWII.

The association between travel and DVT was first reported in 1954 with a description of 5 cases, and soon the phrase “economy-class syndrome” appeared to describe the problems of venous return that occur in passengers on long distance flights in seats with evident restrictions of space and few opportunities to move their lower limbs.

Since then, there have been several published case series involving patients who have taken long-distance flights and later developed DVT and/or pulmonary embolism, but few authors have associated those 2 conditions with overland travel by car, coach, lorry, or train.

What are the risk factors for developing economy class syndrome?

The guidelines looked at a range of risk factors for the development of DVT in long-distance travelers . They conclude that developing DVT or pulmonary embolism from a long-distance flight is generally unlikely, but that the following factors increased people's risk:

- Having a history of blood clots or having cancer
- Having a known thrombophilic disorder, a medical disorder that predisposes you to forming blood clots
- Undergoing a recent surgery
- Use of oral contraceptives or other estrogen treatments
- Pregnancy
- Obesity
- Sitting in a window seat if this prevents getting up and moving around
- advanced age

What are the symptoms of DVT?
About half of people with DVT have no symptoms at all. The following are the most common symptoms of DVT that occur in the affected part of the body (usually the leg or arm):

- Swelling of your leg or arm
- Pain or tenderness that you can't explain
- Skin that is warm to the touch
- Redness of the skin

What are the symptoms of Pulmonary Embolism (PE)?

You can have a PE without any symptoms of a DVT. Symptoms of a PE can include:

- Difficulty breathing
- Faster than normal or irregular heartbeat
- Chest pain or discomfort, which usually worsens with a deep breath or coughing
- Anxiety
- Coughing up blood
- Lightheadedness, or fainting

How can we prevent DVT from developing during travelling?

- Keep moving: Don't sit in a cramped position for too long.
- Wriggle your toes and work those ankles and knees.
- Make an effort to stand up and walk along the aisle to get the blood pumping.
- If possible, ask for an aisle seat. Studies have shown that passengers in window seats have double the risk of developing DVT.
- Sit right, not tight: Don't cross your legs or sit on the edge of the seat. Wear loose clothing, and avoid stockings or socks with tight bands.
- Avoid alcohol and caffeine on board: Don't let yourself be intoxicated or dehydrated before and during a long-haul flight. Instead, drink water at regular intervals.
- No sleeping pills either: This encourages immobility and increases the risk of DVT.

How can we diagnose DVT?

Duplex ultrasonography: is an imaging test that uses sound waves to look at the flow of blood in the veins. It can detect blockages or blood clots in the deep veins. It is the standard imaging test to diagnose DVT.
A D-dimer blood test measures a substance in the blood that is released when a clot breaks up. If the D-dimer test is negative, it means that the patient probably does not have a blood clot.
Contrast venography is a special type of X-ray where contrast material (dye) is injected into a large vein in the foot or ankle so that the doctor can see the deep veins in the leg and hip. It is the most accurate test for diagnosing blood clots but it is an invasive procedure, which means it is a medical test that requires doctors to use instruments to enter the body. Therefore this test has been largely replaced by duplex ultrasonography, and it is used only in certain patients.
Magnetic resonance imaging (MRI)—a test that uses radio waves and a magnetic field to provide images of the body—and computed tomography (CT) scan—a special x-ray test—are imaging tests that help doctors diagnose and treat a variety of medical conditions. These tests can provide images of veins and clots, but they are not generally used to diagnose DVT.

How can we diagnose PE?

Computed tomographic pulmonary angiography (CTPA) is a special type of X-ray test that includes injection of contrast material (dye) into a vein. This test can provide images of the blood vessels in the lungs. It is the standard imaging test to diagnose PE.

Ventilation-perfusion (V/Q) scan is a specialized test that uses a radioactive substance to show the parts of the lungs that are getting oxygen (ventilation scan) and getting blood flow (perfusion scan) to see if there are portions of the lungs with differences between ventilation and perfusion. This test is used when CTPA is not available or when the CPTA test should not be done because it might be harmful to the particular patient.

Pulmonary angiography is a special type of X-ray test that requires insertion of a large catheter (a long, thin hollow tube) into a large vein (usually in the groin) and into the arteries within the lung, followed by injection of contrast material (dye) through the catheter. It provides images of the blood vessels in the lung and it is the most accurate test to diagnose PE. However, it is an invasive test so it is used only in certain patients.

Magnetic resonance imaging (MRI)

How can we Treat DVT and PE?

Anticoagulants

Anticoagulants (commonly referred to as “blood thinners”) are the medications most commonly used to treat DVT or PE. Although called blood thinners, these medications do not actually thin the blood. They reduce the ability of the blood to clot, preventing the clot from becoming larger while the body slowly reabsorbs it, and reducing the risk of further clots developing.
The most frequently used injectable anticoagulants are
Unfractionated heparin (injected into a vein),
Low molecular weight heparin (LMWH) (injected under the skin), and
Fondaparinux (injected under the skin).
All of the anticoagulants can cause bleeding, so people taking them have to be monitored to prevent unusual bleeding.

Thrombolytics

Thrombolytics (commonly referred to as “clot busters”) work by dissolving the clot. They have a higher risk of causing bleeding compared to the anticoagulants, so they are reserved for severe cases.

Inferior vena cava filter

When anticoagulants cannot be used or don’t work well enough, a filter can be inserted inside the inferior vena cava (a large vein that brings blood back to the heart) to capture or trap an embolus (a clot that is moving through the vein) before it reaches the lungs.

Thrombectomy/Embolectomy

In rare cases, a surgical procedure to remove the clot may be necessary. Thrombectomy involves removal of the clot in a patient with DVT.
Embolectomy involves removal of the blockage in the lungs caused by the clot in a patient with PE.


AIR

THIS IS MY HOME

In the United States 3.5 million people will experience homelessness in a given year, 1.35 million of them being children.

STRESS AND CARDIOVASCULAR HEALTH

WRITTEN BY: SHABNAM MAHJABEEN, MBBS.
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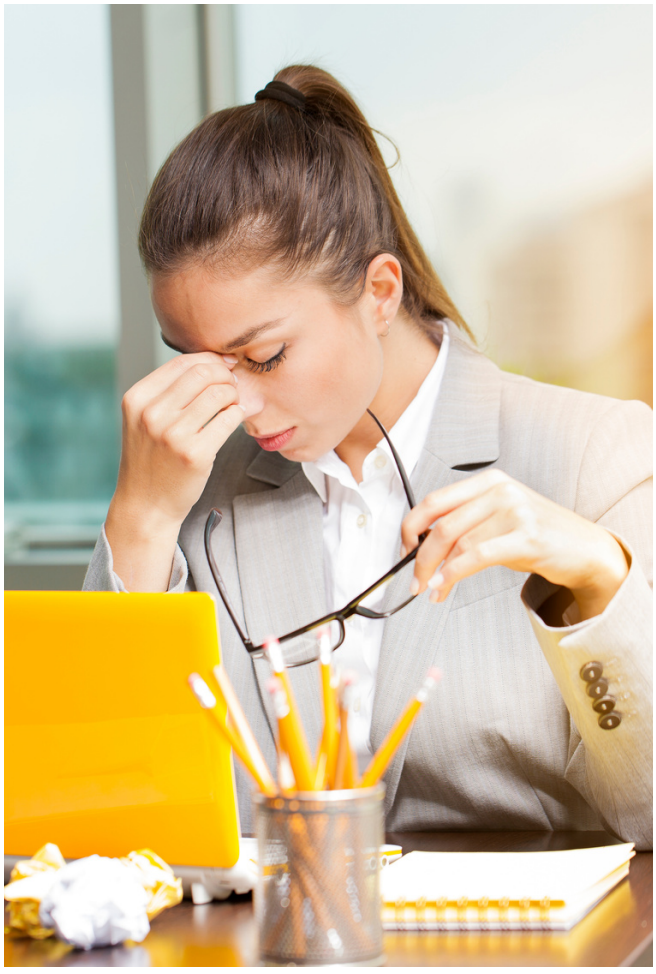
According to Wikipedia, a news article discusses current or recent news of either general interest (i.e. daily newspapers) or of a specific topic (i.e. political or trade news magazines, club newsletters, or technology news websites).In our everyday lives we seem to be happy, well-adjusted people, but as we cope with everyday situation, stress has a way of building up and becomes overwhelming.

One feels acute stress in danger, accidents, natural disasters, after surgery. Overthinking about study and final exams, death of a friend or loved one, problems in a personal relationship, work overload, starting a new job, unemployment, retirement, pregnancy, crowds, relocation, daily hassles, legal problems, financial hassles, perfectionism can lead to chronic stress which goes on for days, weeks even months.



Stress affects most of us. Men and women of all ages, races, socio economic background endure some kind of stress. In a recent Canadian poll, about one-quarter of Canadians said that they feel quite a bit stressed or extremely stressed most days.

Stress is an emotion that is meant to protect us, motivate us, make us feel alive. It's a natural physiological response to threat, danger, challenge, unpredictability, uncontrolled situation. But if one cannot go back to a relaxed state even after resolving stressful conditions, then it will cause harm to both health and mind. Signs of stress can be recognized if someone feels dizziness, general aches and pains, grinding teeth, clenched jaws, headaches, indigestion, muscle tension, difficulty sleeping, racing heart, sweaty palms, tiredness, exhaustion, trembling, weight gain or loss, upset stomach, constant worry, difficulty making decisions, forgetfulness, inability to concentrate, lack of creativity, loss of sense of humor, poor memory, anger, anxiety, crying, depression, feeling powerless, frequent mood swings, irritability, loneliness, negative thinking, nervousness, sadness.

Our body deals with stressful conditions by releasing a series of hormones named Cortisol, Epinephrine and Norepinephrine from the Adrenal gland present inside our body. These hormones are essential for our survival, and needed in specific amounts and in a timely release manner for overall bodily development and growth. During an event of acute stress, these hormones travel to the heart through blood vessels. This makes the heart beat faster enabling the body to get proper circulation and prepare for action. Blood pressure and blood glucose level spike momentarily.

If this series of events happens over and over again, the heart may suffer permanent damage. Chronic stress can increase appetite that results in consuming fatty and carbohydrate rich food, causing cravings for comfort food frequently.
To cope with stress, people turn to smoking and alcohol consumption which increases the chance of getting heart problems.

Eventually our internal organs become filled with fat tissue, most importantly our heart and blood vessels. Major blood vessels become narrower and can't supply the required amount of blood to other parts of the body. This pathological process can be life threatening for people with family history of cardiac diseases, old age, male sex, sedentary lifestyle, unhealthy diet.

Long standing hypertension is one of the other outcomes of chronic stress. With hypertension, blood vessels are injured constantly which can lead to build up of blood clot and eventually stroke and heart attack.

Loss of loved ones can be a cause of heart problems. Grief can become so powerful that it can break one's heart, known as "Broken Heart Syndrome" or Stress Induced Cardiomyopathy, where structure of the heart changes and it can't pump effectively. This recognized condition suggests the old saying, that someone could be "scared to death", might indeed be true. Extreme emotional or physical stress symptoms exactly mimic those of a heart attack or heart failure.

Among the precipitating factors are the death of a loved one, financial loss, physical assault, severe pain or an intense argument. Exposure to synthetic cannabinoids may also provoke the condition. Stress induced heart failure appears more frequently among individuals beyond age 50 with women outnumbering men by a margin of 5 to 11-fold. Symptoms include chest pain often radiating to either arm, shortness of breath, dizziness, weakness and loss of consciousness. Heartbeat irregularities regularly complicate the process. Previously most people were expected to fully recover within 1-4 weeks, but lately it seems that fatalities occur in about 20% of those affected. Some may even suffer recurrences.

Heart diseases are the leading cause of mortality all over the world. Stress is one of the modifiable risk factors, and by identifying this cause in the early stage one can slow the disease process. Exercising, maintaining a positive attitude, not smoking, not drinking too much coffee, enjoying a healthy diet and maintaining a healthy weight are good ways to deal with stress. Medicines are helpful for many things, but usually not for stress. Some people take relaxant pills to calm them down immediately, but it's far better in the long term to learn to manage stress through relaxation or stress management techniques.

Spending time with families, loved ones, friends, going outdoors regularly are also recommended. Meditation and yoga have been shown as proven ways to reduce stress. Asking for help in stressful situations at home and at work is encouraged. These are the common ways to deal with stress but at first one has to recognize the cause behind the stress and bring it under control. If that's not possible, seeking professional help is the ideal way.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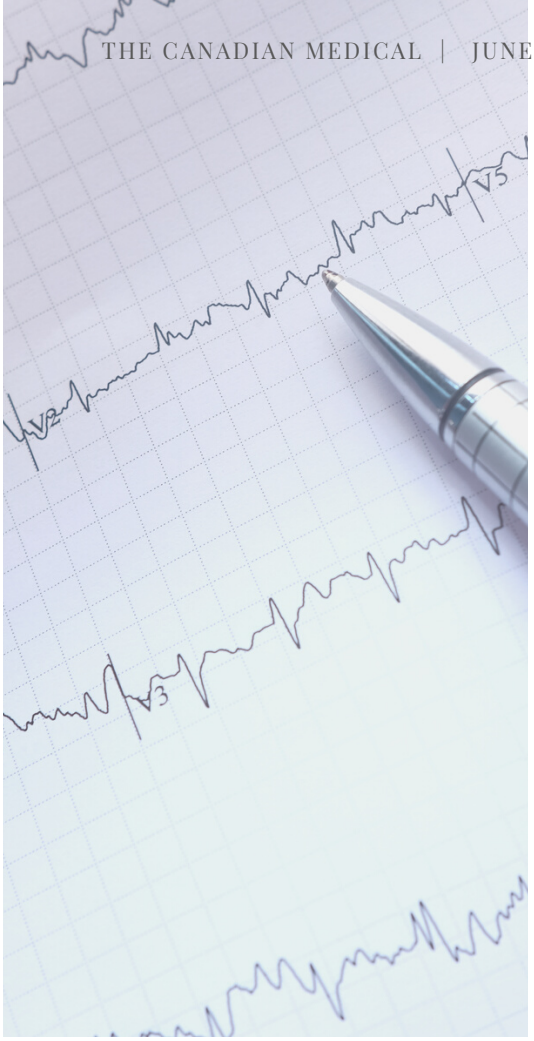

Myocardial Infarction

Back to Basics

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Heart attack or myocardial infarction is a common disease that poses a threat to human life, and according to many studies it is the main cause of death in the world.

A heart attack occurs when the blood supply to the heart is suddenly cut off, as the heart receives blood through three main arteries, known as coronary arteries, and this often happens with the occurrence of a sudden blockage of one or more of these arteries or their branches due to many reasons, the most common of which is the accumulation of a clot consisting of fat and some cellular waste in these arteries, and this condition is called atherosclerosis , the inflammatory process has also been found to have a role in the emergence of a heart attack, as it facilitates the accumulation of fatty clots in the inflamed arteries . Although most cases result from coronary arteriosclerosis, some of them occur as a result of the temporary contraction of these arteries.

You may have complete or partial blockage in a coronary artery. Complete embolism means that you have a myocardial infarction associated with the elevation of the ST segment. Partial embolism means you have a myocardial infarction that is not associated with ST segment elevation .Diagnosis and treatment may vary depending on the type of blockage you have.

As a result the damaged cardiac tissue will develop a condition called ischemia, which occurs when oxygen is cut off from the cells. If this condition continues for a longer period of time, the cells die and the patient suffers a myocardial infarction.

Angina pectoris is an early warning of a heart attack, caused by a temporary decrease in blood flow to the heart. Which occurs before the occurrence of many cases of heart attack, and may come in the form of attacks of chest pain as a result of ischemia as well, but this pain lasts for a shorter time than that associated with a heart attack, and the ischemia will soon end without causing permanent damage to heart tissue.

Common signs and symptoms of a heart attack include:

- Pressure, tightness, pain, or a squeezing or painful sensation in the chest or arms that may
- spread to the neck, jaw, or back
- Nausea, indigestion, heartburn, or abdominal pain
- Shortness of breath
- Cold sweat
- Exhaustion
- Sudden dizziness or lightheadedness

Heart attack symptoms variation: Not all people with heart attacks have the same symptoms or severity. Some people have mild pain, while others have more severe pain. Some people have no symptoms. For others, the first sign may be sudden cardiac arrest. However, the more symptoms and indicators of the disease you have, the higher the chance of a heart attack.

Some heart attacks occur suddenly, but many people have warning symptoms and signs of illness hours, days or weeks before a heart attack. The first warning may be a recurrence of chest pain or pressure (angina), which occurs due to exercise, and can be alleviated by rest.

Risk factors:
Some factors contribute to the unwanted accumulation of fatty deposits (atherosclerosis), narrowing the arteries throughout your body. You can also improve or eliminate many of these risk factors to reduce your chances of having a heart attack:

Age. Men aged 45 or older and women aged 55 or older are more likely to have a heart attack than men and younger women.
Tobacco. This includes smoking and exposure to secondhand smoke for a long time.

High blood pressure. Over time, high blood pressure may damage the arteries leading to the heart.
The high blood pressure associated with other problems, such as obesity, high cholesterol and diabetes, increases this risk further.

High blood cholesterol levels or triglyceride levels. A high level of low-density lipoprotein (LDL) cholesterol ("bad" cholesterol) most likely leads to narrowing of the arteries. A high level of triglycerides, a type of blood fat associated with your diet, also increases your risk of a heart attack.

However, a high level of high-density lipoprotein (HDL) cholesterol ("good" cholesterol) may reduce the risk of infection.

besity. Obesity is associated with high blood cholesterol levels, high triglyceride levels, high blood pressure and diabetes. The incidence of these diseases may decrease with a loss of only 10% of body weight.

Diabetes. Not producing enough of the hormone produced by the pancreas (insulin) or not responding properly to insulin causes your blood sugar levels to rise, increasing your risk of heart attack.

Metabolic syndrome. This syndrome occurs when you have obesity, high blood pressure and high blood sugar. Having metabolic syndrome also makes you more likely to have heart disease than not.

Family history of heart attack. If your siblings, parents or grandparents experience early heart attacks (at age 55 for males and 65 for females), you may be at increased risk.

Lack of physical activity. The lack of physical activity contributes to high blood cholesterol levels and obesity. People who exercise regularly have better heart health, including lower blood pressure.

Tension. Your stress response may increase your risk of a heart attack.

Use of prohibited drugs. Taking stimulant drugs, such as cocaine and amphetamines, can result in spasm of your coronary arteries, which can put you at risk of a heart attack.

History of pre-eclampsia (preeclampsia). This condition causes high blood pressure during pregnancy and increases the lifetime risk of heart disease..

Diagnosing of a heart attack:
A heart attack is diagnosed through the following tests:

Electrocardiogram (ECG): This is the first test to be performed to diagnose a heart attack, where this test records the electrical activity of the heart via electrodes attached to the skin, and the pulses are recorded as waves displayed on the screen or printed on paper, and because the affected heart muscle does not give electrical impulses normally, the chart may show or predict a heart attack,

Blood tests: some heart proteins slowly leak into the blood after the heart has suffered a heart attack, where doctors in the emergency room will take samples of the patient's blood to test for the presence of these enzymes.

Additional tests:
Chest X-ray: the chest X-ray image allows the doctor to examine the size of the heart and blood vessels and look for fluid in the lungs.
Echocardiogram: a laboratory sound waves to the heart and thus the waves of the heart and are processed electronically to provide photos and videos of the heart, it can help in determining whether an area of the heart has been damaged or is not pumping normally.
Exercise stress test: shows how your heart works during physical activity.

Because exercise makes your heart pump harder and faster, an exercise stress test can reveal problems with blood flow within your heart.
A stress test usually involves walking on a treadmill or riding a stationary bike. Your heart rhythm, blood pressure and breathing are monitored. Or you'll receive a drug that mimics the effects of exercise.
Your doctor may recommend a stress test if you have signs or symptoms of coronary artery disease or an irregular heart rhythm (arrhythmia). The test may also guide treatment decisions, measure the effectiveness of treatment or determine the severity if you've already been diagnosed with a heart condition.

Cardiac CT or MRI. These tests create images of your heart and chest. Cardiac CT scans use X-rays. Cardiac MRI uses a magnetic field and radio waves to create images of your heart. For both tests, you lie on a table that slides inside a long tube-like machine. Each can be used to diagnose heart problems, including the extent of damage from heart attacks
Coronary catheterization (angiography): a liquid dye is injected into the arteries of the heart through a thin tube that is inserted through the artery in your wrist or groin into the arteries in the heart, where the dye makes the arteries more visible and reveals areas of blockage.

Treating a heart attack:
Every minute after a heart attack, more heart tissue is degraded, and rapidly restoring blood flow to the heart helps prevent heart damage

Treatment of heart attack with medications:
Aspirin: emergency medical paramedics may give you aspirin right away because it reduces blood clotting which helps maintain blood flow through narrow arteries.

Nitroglycerin: this drug is used to treat chest pain (angina), can help improve blood flow to the heart by expanding blood vessels.
Pain relievers: people with a heart attack may be given some pain relievers such as morphine.
Thrombolytics: These drugs, also called clot busters, help dissolve a blood clot that's blocking blood flow to your heart. The earlier you receive a thrombolytic drug after a heart attack, the greater the chance you'll survive and have less heart damage.

Antiplatelet agents: platelet aggregation inhibitors are medications that help to prevent formation of new clots, maintain the size of existing clots and prevent them from becoming larger.

Blood thinning medications: such as heparin are likely to be given to make your blood less viscous and less prone to clots, as heparin is given intravenously or by subcutaneous injection.

Beta blockers: these drugs help relax the heart muscle, regulate heart rate, lower blood pressure, and prevent future heart attacks.
ACE inhibitors: these medications reduce blood pressure and relieve pressure on the heart.
Statins: these drugs help control blood cholesterol.

In addition to medication, patients may undergo one of these procedures to treat a heart attack:

Coronary angioplasty (stent implantation): also known as percutaneous coronary intervention (PCI), which is a procedure used to open blocked heart arteries, where a small balloon is inserted and inflated temporarily in the place where the artery is closed to help its expansion and angioplasty is often performed by placing a small, permanent wire mesh tube known as a stent to help support the opening of the artery and reduce the likelihood of narrowing and blockage again.

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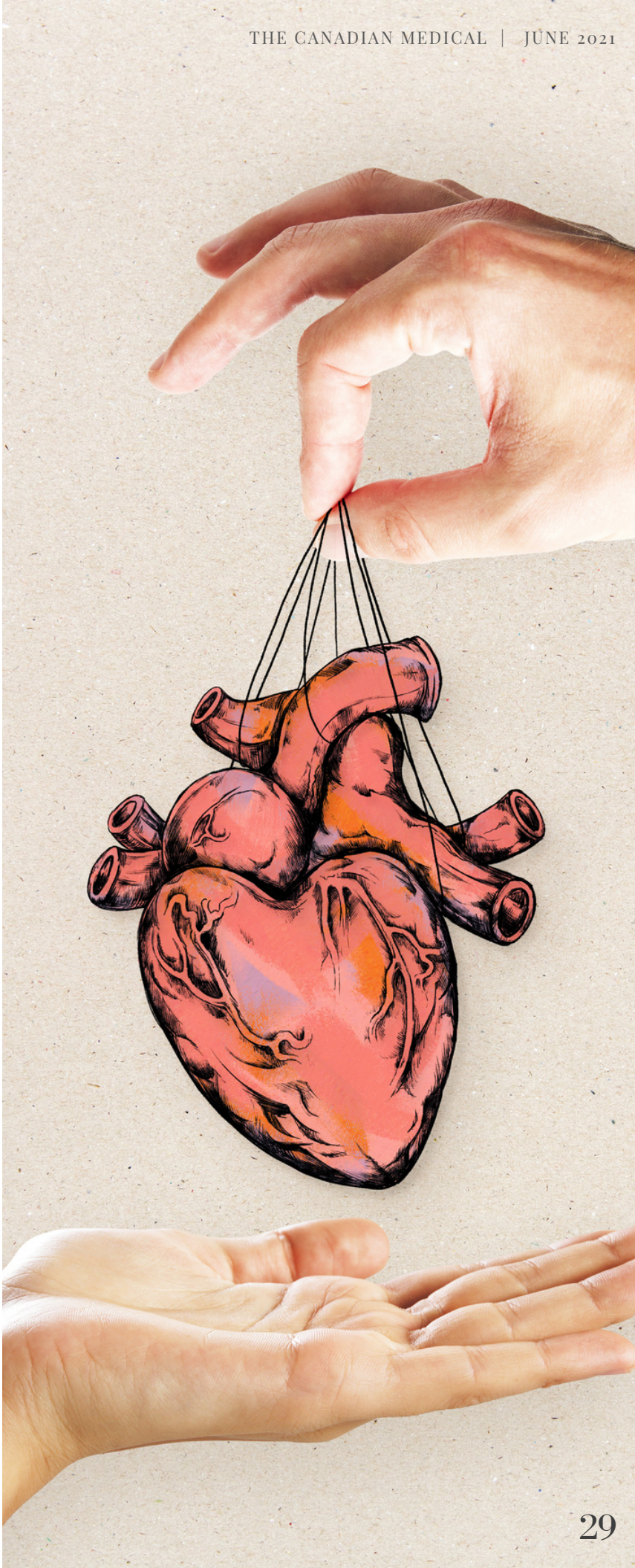
Coronary artery bypass surgery: is a heart surgery procedure in which one or more coronary artery blockages are bypassed by diverting blood vessels to restore normal blood flow to the heart, these connections usually come from the patient's own arteries and veins located in the chest (thoracic vessels), leg (saphenous vein) or forearm (radial artery), and the vessels used in the grafting circulate around the clogged arteries to create new pathways that allow oxygen-rich blood to flow to the heart.



In some cases, doctors perform emergency bypass surgery at the time of a heart attack. If possible, however, you might have bypass surgery after your heart has had time — about three to seven days — to recover from your heart attack.

Cardiac rehabilitation:

Most hospitals offer programs that might start while you're in the hospital and continue for a few months after you return home. Cardiac rehabilitation programs generally focus on four main areas — medications, lifestyle changes, emotional issues and a gradual return to your normal activities.

It's extremely important to participate in this program. People who attend cardiac rehab after a heart attack generally live longer and are less likely to have another heart attack or complications from the heart attack. If cardiac rehab is not recommended during your hospitalization, ask your doctor about it.

Lifestyle changes and home remedies:

Avoid smoking: One of the most important steps that you must take to improve your heart health is not to smoke. If you need to quit smoking, seek help from your doctor.

Control blood pressure and cholesterol levels: If one or both of them are high, your doctor can prescribe changes to your diet and medications. Ask your doctor how often you need to monitor your blood pressure and cholesterol levels.

Get regular medical checkups: Some of the major risk factors for a heart attack such as high cholesterol, high blood pressure and diabetes may not cause any symptoms early on, so you should consult your doctor regularly to help you discover and manage these factors.

Exercise: Regular exercise helps improve the function of the heart muscle after a heart attack and helps prevent a heart attack in the first place, as walking for 30 minutes a day can improve your health excellently.

Maintaining a healthy weight: Excess weight stresses your heart and can contribute to high cholesterol, high blood pressure and diabetes.

Adhere to a heart-healthy diet: Saturated fats, unsaturated fats, and high cholesterol in your diet narrow the arteries, and too much salt can raise blood pressure, so you must stick to a heart-healthy diet that includes lean proteins such as fish, beans, fruits and vegetables. And whole grains.

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CAD IN WOMEN

Written by: Dr. Wesam Alerian MD. & Dr. Essam Alerian MD. Reviewed and accepted by: Dr. Abdelwahab A. Arrazaghi MD. FDABIM. FRCPC Specialist of Internal Medicine and cardiovascular medicine, University of Toronto, Canada

For a long time, coronary artery diseases were thought of as a health problem that mostly affects men. However we now know it's not just a man's problem. Recent studies showed that CAD is known to be the leading cause of death for women in the United States and Canada, responsible for about 1 in 4 female deaths each year. Unfortunately,

Only 1 in 3 women identify cardiovascular disease as the greatest health problem facing women today. A survey data suggest that on a day-to-day basis, women still worry more about getting breast cancer than heart disease even though heart disease kills six times as many women every year.

There are many reasons to think that CAD is different in women. A woman's symptoms are often different from a man's, making the diagnosis of acute coronary syndromes (ACS) often more challenging, especially in young women. So it is important to recognize differences in the signs and symptoms at presentation, in order to improve patient management and outcomes.

As it is in men, many risk factors can contribute to the event of CAD, However some risk factors may affect women's to a greater extent:

- Hyperlipidemia: Before menopause, a woman's own estrogen helps protect her from heart disease by increasing HDL (good) cholesterol and decreasing LDL (bad) cholesterol. After menopause, women have higher concentrations of total cholesterol than men do, increasing the risk of death from heart disease in women over age 65.

- Diabetes: Diabetes increases the risk of heart disease in women more than it does in men, perhaps because women with diabetes more often have added risk factors, such as obesity, hypertension, and high cholesterol, or because they are often older when diagnosed with CAD.

- Smoking: Studies showed that it is a greater risk factor for heart disease in women than it is in men.

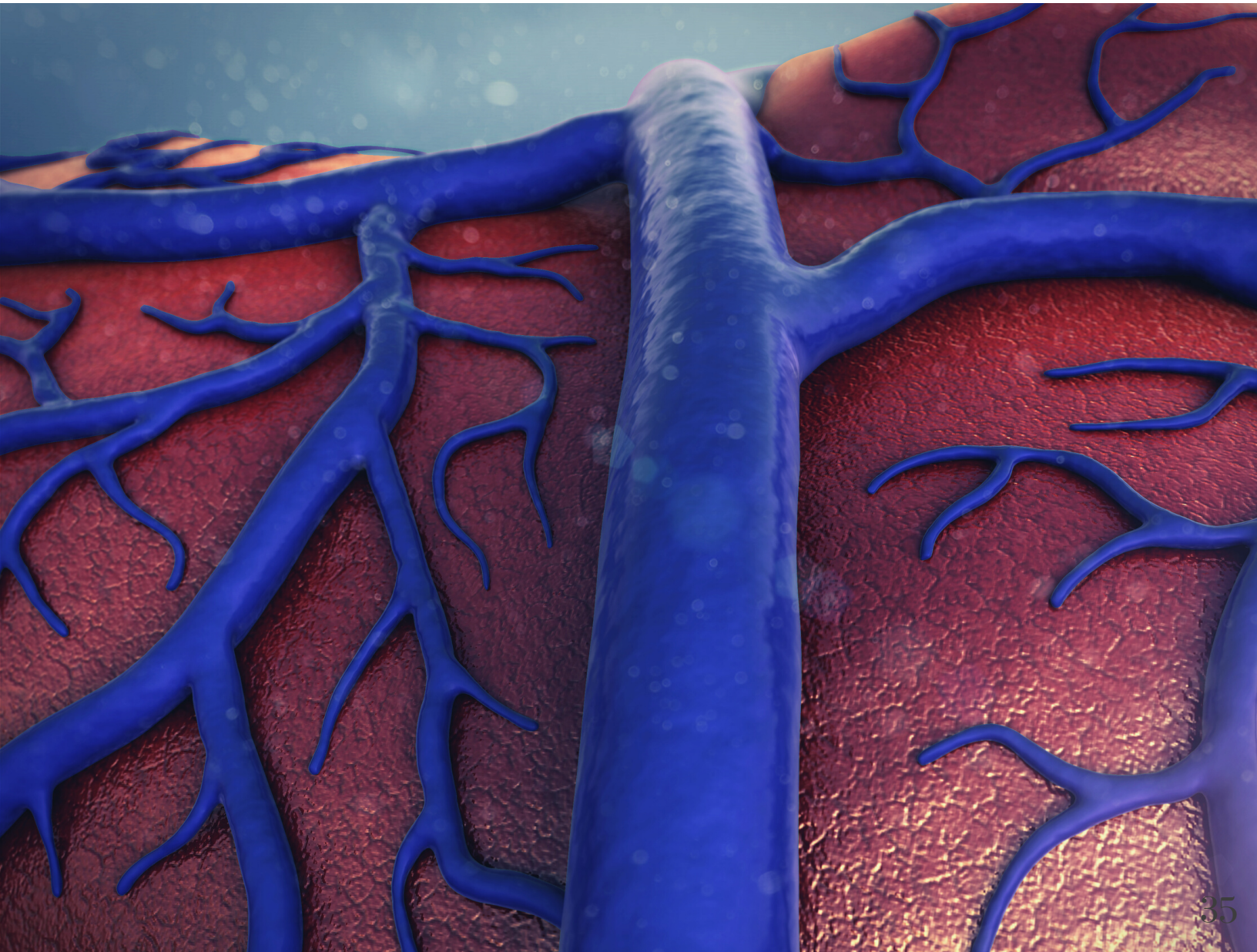
Diagnostic tests, including blood tests, an electrocardiogram (ECG), echocardiogram, exercise stress test, coronary computed tomography angiogram (CTA), or cardiac catheterization can help provide a more complete and accurate picture of a woman's heart health.

Women have smaller and lighter coronary arteries than men do. This makes treatment options such as angiography, angioplasty, and coronary bypass surgery more difficult to do, thereby reducing a woman's chance of receiving a proper diagnosis and having a good outcome. Women tend to have more complications following surgery, and they are twice as likely to continue having symptoms several years after coronary angioplasty, as they are usually older than men and have more chronic conditions at the time of their first coronary event.
Cardiac rehabilitation can improve health and aid recovery from heart disease, however, women are less likely to be referred for cardiac rehabilitation.

Heart disease is much more common in women than many people realize, while it may not be possible to completely eliminate risks for heart disease, women can take further steps to reduce it.

These include:

- Quit smoke, actively or passively.
- Make changes in diet that may help controlling blood cholesterol, blood pressure and blood sugar if diagnosed with any.
- Increase the level of exercise/activity to help achieve and maintain a healthy weight. Moderate exercise for 30 minutes a day, on most days is recommended, but check with your doctor before starting an exercise program.
- Reduce stress and treat depression.
- If a woman had a heart attack before, doctors might recommend starting a low-dose aspirin every day in order to help prevent another attack, but never start taking aspirin for heart disease prevention without medical consultation.

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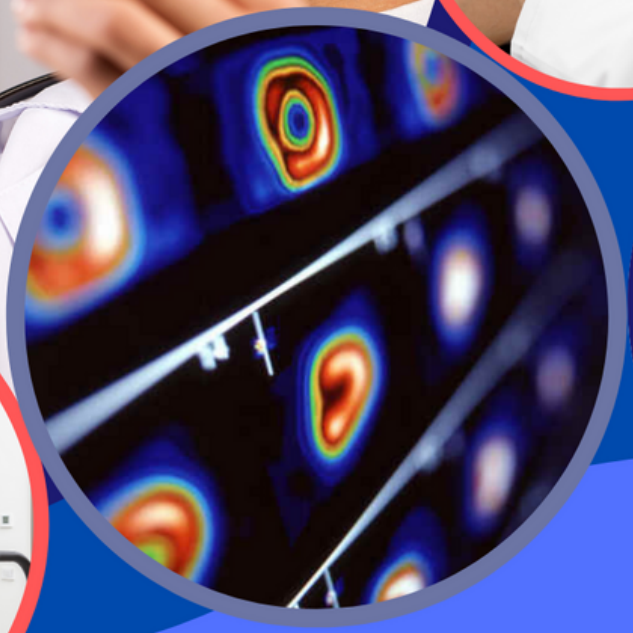

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SUDDEN CARDIAC DEATH IN ATHLETES

Written by: Mohamed Mohamed, MBBS. & Yahye Rage, MBBS. Reviewed and accepted by: Dr. Abdelwahab A. Arrazaghi MD. FDABIM. FRCPC Specialist of Internal Medicine and cardiovascular medicine, University of Toronto, Canada

Sudden cardiac death (SCD) in athletes is an agonizing matter for families, society, and health professionals. Though the sports practices boost physical fitness, health, and quality of life, intense training and strenuous exercises done by athletes potentially trigger sudden cardiac arrest in them. It can also occur due to known and unknown cardiac diseases in athletes such as cardiac hypertrophy.

Apart from these, other risk factors are also involved in the occurrence of this disorder, for example, genetic factors, environmental factors, family status, and lifestyle style, etc., It is examined that in older athletes such as 35 or above 35 years of athletes, coronary artery disorder emerges as the key source of SCD. Though, in some older athletes, hypertrophic cardiomyopathy is also reported as the major risk factor of sudden cardiac death in competitive athletes and responsible for above one-third of the deaths in athletes.

However, a small number of individuals may still have conditions that place them at risk for sudden death during exercise. Most people do not have an increased risk of SCD prevalence because it is infrequent, but certain individuals have increasingly become associated with it, especially athletes.

The World Health Organisation (WHO) classified SCD as an unexpected death within an hour of the onset of symptoms [2]. On April 12, 2021, a Morrocan Athlete, Redi Saki passed out in the middle of a soccer match and was rushed to the hospital and was announced dead upon arrival. This 21-year-old athlete and many other athletes experience life-threatening moments and lose their life with the intense sports activity they precede as a career. This article believes that these professionals would have benefited from advanced screening techniques prior to their match.

Among the many professionals and amateur athletes who have lost their lives to SCD are stories like Norweigan Olympic swimmer Alexander Dale Oen. Oen, who had the fourth-fastest breaststroke time in history, was found collapsed on his bathroom floor whilst on a training camp after his heart stopped. When an athlete suffers a sudden cardiac arrest many like Oen, do not survive. For some though, like 23-year-old Fabrice Muamba who played professional football in the UK, lives can be saved. Muamba collapsed on the pitch during a game in 2012, despite his heart-stopping 78minutes of awareness of SCD and timely CPR from the medics helped him to survive.

Despite its rare prevalence SDC is a worldwide health concern but within the sporting community where athletes are seen as figures of health and fitness, it poses some questions around what measures should be put in place to screen, detect, and where possible prevent sudden death. The question seems to be if the cost of implementing screening, which includes psychological and ethical costs alongside financial, is worth the potential difference it can make to SCD rates.

SCD is the most prevalent among athletes, although statistics differ widely. Approximately, 1 in 50,000 to 1 in 80,000 athletes will likely develop SCD each year. Though rare, this disorder in athletes can have an extreme effect on society.
Risk assessment is beginning to produce some positive effects on the whole, though an Italian nationwide pre-participation method for the screening for sudden cardiac death in competitors failed due to the lack of success in recognizing the significance of its effects on economic cost.

With the help from the Italian National Institute of Statistics (ISTAT), a lot of data was gathered on the results in standard terms and then matched to sport-related figures in Italy, an analysis done by the Italian National Olympic Committee (CONI). In the year 2019, people were diagnosed with SCD, and of the 98 SCD cases recorded, 48% were competitive, 52% non-competitive athletes. The proportion of men to women had been 13 to 1. If we look at the most popular activities, then we see that 33.7% of them are soccer, the traditional sports in fitness was (13.3%) and finally, athletes were (15.3%).

From the research conducted in US high-school and colleges (students between the ages of 12 and 24), the rate of SCD was 0.5 per 100 000. Simultaneously, in Italian competitive athletes, the number is significantly higher than 3.6 per 100 000 for college athletes (age 14-35). According to the National Center for Catastrophic Sports Injury Research, the incidence is substantially higher in males at the high school and college athlete levels (respectively, 0.75 vs.0.13 per 100 000 athletes annually from these two groups).

However, based on similar studies, it has been recorded that the rates of death among Scandinavian people between the ages of 15 and 30, that were physically active were nearly as high in Denmark as they were in Norway, at 0.9 and 1.21 per 100 000 athlete persons respectively. Also, college athletes' death rate (ages ranged from 20 to 24) is double that of high school athletes (ages ranging from 12 and 19). Those numbers mean twice as many college athletes die each year.

It is also important to note that hypertrophic cardiomyopathy (thickening of the heart) is the leading cause of death in athletes in the US and predisposes them to SCD. It is estimated that it happens to around 35% to 50% of young athletes per year.

On the other hand, a substantial impact of socioeconomic status on the incidences of sudden cardiac death in athletes anticipated but it has not been completely determined. Lower education level is also considered as the risk of occurrence of cardiovascular disorders and these cardiovascular disorders can significantly impact people's life.

It has been evaluated that lower educational status is a substantial risk factor to develop lipids and cholesterol plaques, these plaques restrict the blood flow in the arteries of the heart, which can ultimately lead to severe cardiovascular diseases and sudden cardiac death. Therefore, lower educational status has always been a risk factor for the advancement of cardiovascular diseases.

HOW WOULD TESTING SUDDEN CARDIAC DEATH BENEFIT AN ATHLETE?

The ultimate aim of the screening objective is to identify factors that could predispose to SCD. Diagnosis of malignant myopathies has been established through testing with a 12-lead electrocardiogram (ECG) and can reduce the incidence of this disorder.

The more modern the ECG interpretation, the more precise it is, i.e., the greater its capacity to identify severe disorders, including the potential to diagnose life-threatening cardiac conditions (preserved sensitivity). Also, it ensures the ability to correctly identify heart failure (a reduction in false-positive (increased specificity) results is almost as critical as an improvement in the positive ones). That will mean that the deployment is a life-saving and cost-effective approach for young athletes if the ECG-detectable cardiac conditions that trigger SCD are found during the pre-participation screening.

LIST OF HIGH-RISK CAUSES OF SUDDEN CARDIAC DEATH IN YOUNG ATHLETES

Several factors are the causes of sudden cardiac death in athletes under 30, including hypertrophic cardiomyopathy, ventricular dysplasia, arrhythmogenic right ventricular dysplasia, and aortic heart problems to Marfan syndrome, and dilated cardiomyopathy, myocarditis, valvular disease, and electrical disorders. It may also be caused by commotio cordis.

In most studies, hypertrophic cardiomyopathy (HCM) was the most prevalent cardiac disease and responsible for 36% of SCD in the US registry from the Minneapolis Heart Institute Foundation. When discussing which heart anomalies were discovered, more frequent ones include coronary artery anomalies (17%). In contrast, the others include arrhythmogenic right ventricular cardiomyopathy (or even ventricular defects) in only a small percentage (4%) of cases. Other cases were associated with aortic stenosis and aortic rupture, dilated cardiomyopathy, CAD, and mitral valve prolapse.

HOW TO PREVENT AND TREAT SUDDEN CARDIAC DEATH IN ATHLETES

There are a number of strategies that are helpful for the treatment and prevention of sudden cardiac death in athletes and other young people. It includes individual as well as team strategies to handle sudden cardiac death in athletes. Some of these prevention strategies involve CPR training, public health campaigns, and the usage of automated external defibrillators (AEDs) at public places.

Socioeconomic disparities could be a significant consideration for the execution of community-wide methodologies to prevent sudden cardiac arrest, with instantaneous implications for the ideal utilization of AEDs within the community.
AEDs have great importance in the prevention, management, and treatment of sudden cardiac arrest but still, the number of AEDs at sports facilities is insufficient to handle the increased sudden cardiac death incidences in athletes.
Defining how to utilize suitable screening techniques for the early diagnostic and adequate prevention of sudden cardiac death in athletes is a significant issue that desires to be addressed.

There are few cost-effective and non-invasive screening strategies as well that have been recommended to diagnose athletes with a high risk of sudden cardiac death. Electrocardiography (ECG) has been the most common screening technique for sudden cardiac death in athletes in Europe. On the other hand, researchers from the USA think that because of the high false-positive rate and low incidences of sudden cardiac death in athletes, there is no need to adopt ECG in the screening of sudden cardiac death.

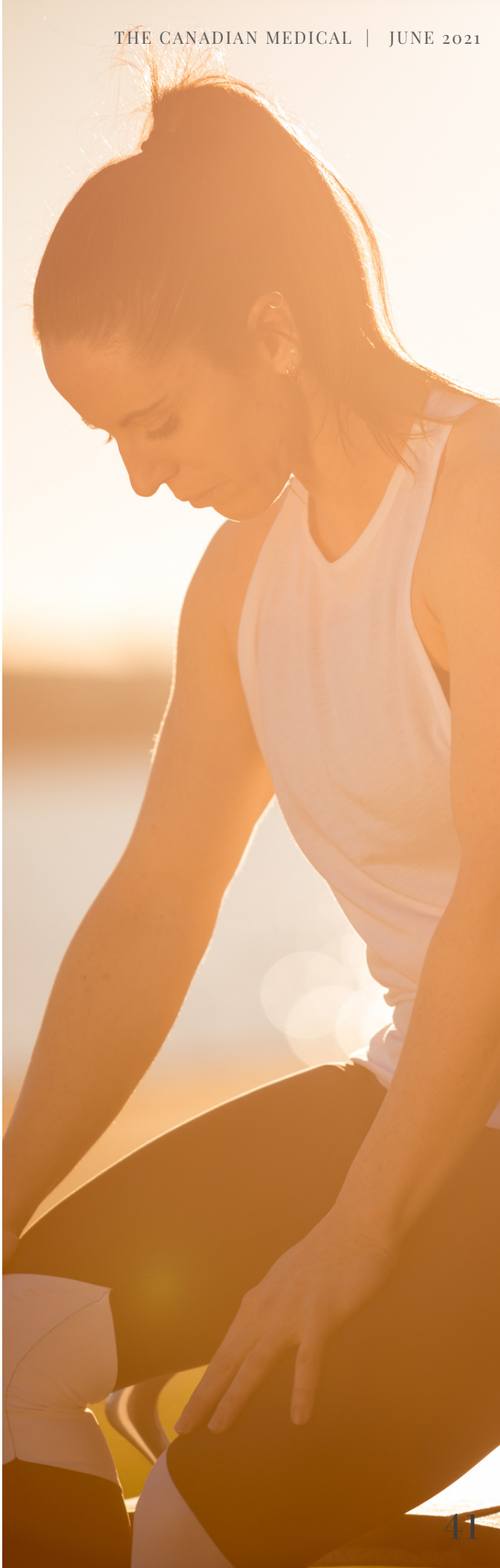
In addition, the American Heart Association suggested Cardiovascular consultation (i.e., Cardiogram) was only for those who were diagnosed with an abnormality. This echocardiography will help discover how strong the heart is, which helps provide suggestions about preventing sudden cardiac death.

American Heart Association (AHA) concluded that universal cardiovascular pre-participation screening might discover susceptible young athletes who are likely to experience cardiovascular incidents (this was said in 1996, when the AHA recommended it for the general population, particularly young athletes, as well as those participating in sports such as American football, basketball, for cardiovascular events).

However, the recommendations include a 12-element entire history and a physical examination was provided before competitive sports, and restricted non-invasive tests such as, e.g., 12-lead ECG echocardiography was administered as the primary screen before an exercise stress test.

A previous study done by Corrado et al. reported that, in a screening program of sudden cardiac death from 1979-1981, only 4.19/100,000 prevalence of sudden cardiac death was identified in athletes and later it reduced to 0.43/100,000 per annum from 2001-2004. This screening strategy reported a significant result and encouraged establishing a screening program for all sports clubs.

The fatality rate of sudden cardiac death in athletes is approximately 85% even after providing the rapid AEDs and 65% in CPR treatment to prevent the sudden cardiac death incidence in athletes. Sudden Cardiac is a striving concern to both athletes and sports clubs. With high-intense activity and not having proper screening is an issue that needs further studies.

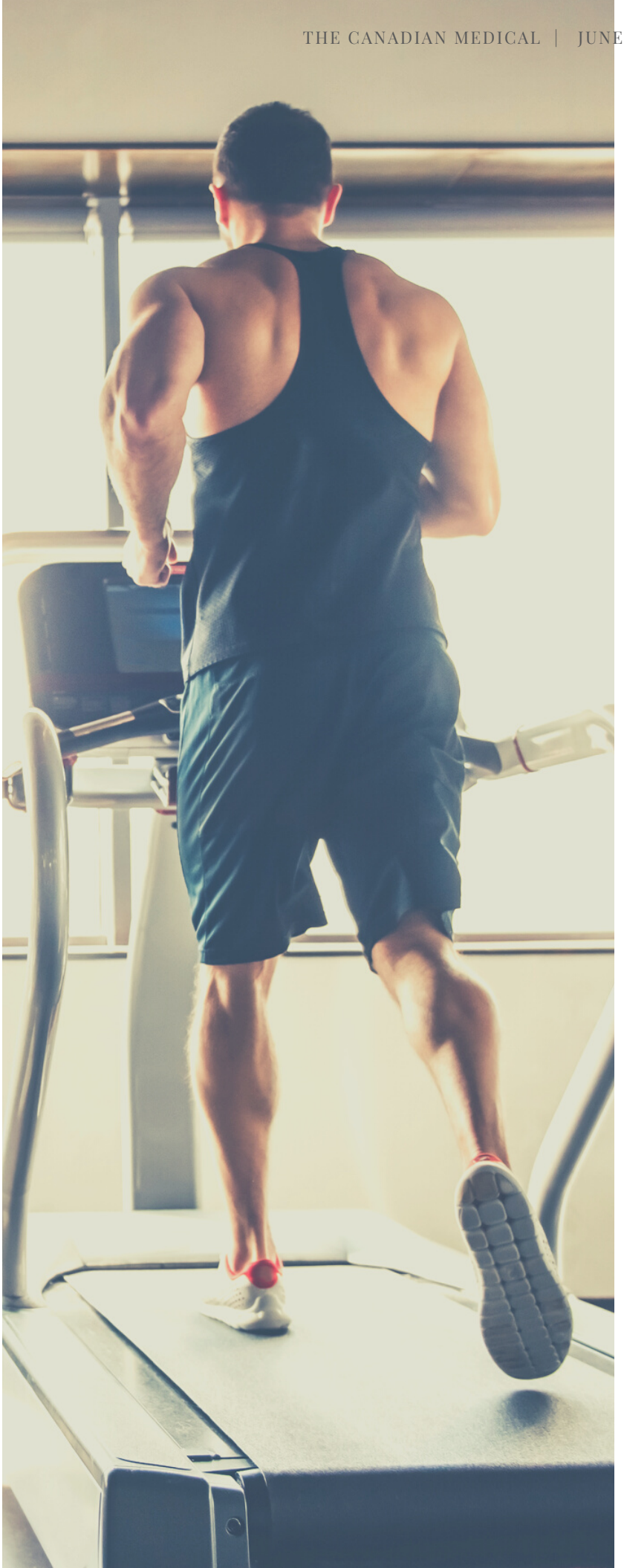


STRESS TEST SHOULD BE IMPLEMENTED AS A PRE-MATCH SCREENING TEST IN ATHLETES

Studies have been done to detect possible cases of individuals that are at risk of sudden cardiac death. Interestingly, athletes usually are giving a pre-participation screening to reduce the number of occurrences of this issue. The American Heart Association questionnaire, echocardiogram, and stress test, and electrocardiogram are the pre-participation screening methods used to assess and evaluate the potential participants. The pre-participation screening is both worthwhile and cost-effective to evaluate many individuals who have a greater risk of sudden death in sports.

A study that recorded the diagnostic capacity of the various athletic screening points and their efficacy gave the following results: 5.09% found positive in the American Heart Association questionnaire responses, 3.78% positive in electrocardiogram responses, 4.96% found positive in the echocardiogram results, and 1.75% reported positive in the exercise stress test. It was found in this study that the electrocardiogram and echocardiogram were the most accurate methods for evaluating athletes at risk of sudden death, while the stress test also had good potential for dragonizing arrhythmias and providing specific treatment for these cases.

From various studies, stress testing is one of the potential and effective means of assessing the performance of the cardiopulmonary system reaction to intense activity or competitive athletics in the hospital or clinic. Since stress tests may uncover congenital heart disease in young competitive athletes, it is an effective diagnostic procedure in individuals predisposed to sudden cardiac death.



Because of the nature of coronary artery disease, which does not cause symptoms before it progresses to a critical stage, pre-participation testing for young people considering joining competitive sports is essential. Additionally, exercise ECG stress testing is usually used to detect the cause of irregular heartbeat in athletes who are asymptomatic and for evaluating cardiac symptoms. On the other hand, for athletes who have a 10-year risk of CAD risk factors, it can be implemented in CAD detection and evaluation. It is also known for low cost, availability, and it is easily detectable by the number of healthcare providers and critical exposure.

Thousands of athletes pass out while participating in competitive sports, whether they are in developing countries or developed countries. SCD has been the leading cause of death worldwide in competitive sports events. These procedures and suggestions in this article shine a light on athletes who collapse with SCD and pre-screening guidelines would be a great asset to athletes participating in these activities. The field of sports medicine would benefit highly from proper guidelines that are noninvasive and affordable to their clubs that could be implemented globally.

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