

AS WE SEE IT

Just Say No to X-Rays!



One reason I battle the medical establishment is that I was a victim at an early age. Due to ignorance and fraud, my DNA was subjected to significant damage.

When I was just 27 years old, I was checked into a hospital because of heartbeat irregularities. The cardiologist insisted that I undergo an angiogram, a procedure that involved threading a catheter into my heart to evaluate my arteries and valves. An X-ray that emits very high amounts of radiation guided the catheter.

My diagnosis was mitral valve prolapse, a relatively benign condition that may affect up to 18% of women and 12% of men.¹ The proper diagnostic procedure

would have been a \$300 ultrasound, as opposed to the \$7,000 angiogram. My insurance company was defrauded of this money, but I have to live with the fact that my DNA was needlessly exposed to a huge amount of radiation.



by William Faloon

We at Life Extension long ago warned our members to avoid unnecessary X-rays.^{2,3} Our rationale has been that even low-level radiation damages DNA in a way that can lead to cancer decades later. Conventional doctors have ridiculed our position that medical X-rays are dangerous.

A new report by the National Academy of Sciences shows the medical establishment has underestimated the cancer risks posed by radiation. After you read this article, I hope you will acquire the information and fortitude to say no the next time your doctor tries to perform an unnecessary X-ray.

UNSAFE AT ANY DOSE

Doctors argue that the amount of radiation emitted from medical X-rays is so low that there is no cancer risk. This flies in the face of data showing that any amount of radiation inflicts free radical damage to DNA and adversely affects our genes.⁴⁻⁶

Several years ago, we reported statistics indicating that a significant percentage of today's cancers are caused by medical radiation.⁷⁻¹¹ These radiation-induced cancers are caused by mutations in DNA genes that regulate cellular proliferation.

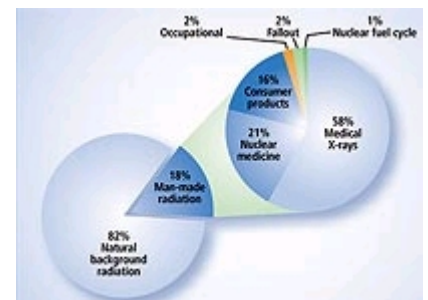
While doctors state that radiation is safe as long as it is kept at a certain level, we argued that even the tiniest particle of radiation inflicts DNA damage. For radiation to be safe, all of the DNA damage must be repaired perfectly. Any damage imperfectly repaired creates mutations, any one of which has the potential to cause cancer. In fact, we pointed to research showing that the lowest possible dose of radiation not only is unsafe, but also does far more damage than previously thought and is indeed mutagenic.^{12,13}

NATIONAL ACADEMY OF SCIENCES REPORT

In June 2005, the National Academy of Sciences released a report stating that even very low doses of radiation can cause cancer. In its report, the National Academy defined low dose as being as low as "near zero."

While the researchers stated that the cancer risk from any given X-ray is very small, their report stated:

"Risk would continue at a linear fashion at lower doses without a threshold and that the smallest dose has the potential to cause a small increase in risk to humans."¹⁴



The pie chart in the lower left portion of the figure shows the contribution of

As you can see by the chart on this page, the amount of radiation emitted from a typical medical X-ray is quite low. Typical X-rays, however, are becoming a relic of the past. CT (computerized tomography) scans provide a much better picture of your insides by using much more radiation. A CT scan of your abdomen, for example, exposes you to an amount of radiation equivalent to that of 500 chest X-rays.¹⁵

man-made radiation sources (18%) relative to natural “background” radiation (82%) exposure of the population of the United States. Sources of man-made radiation are detailed in the pie chart in the upper right portion of the figure. [enlarge image]

The most worrisome diagnostic procedure is the whole body scan, which experts have estimated is the equivalent of 900 chest X-rays. According to the National Academy of Sciences report, a 45-year-old who planned to undergo 30 annual whole body scans would potentially increase his or her cancer risk to 1 in 50.¹⁶

The National Academy of Sciences stated that there is no radiation threshold below which exposure can be viewed as harmless. This finding means that everyone who has had a medical X-ray is at some increased risk for contracting leukemia or a solid cancer. Considering how many X-rays people are exposed to in a lifetime, the risk of contracting cancer from the cumulative effects of many X-rays and CT scans is a serious concern.

RADIATION DOSE COMPARISON			
Diagnostic Procedure	Typical Effective Dose (mSv) ¹	Number of Chest X-rays (PA film) for Equivalent Effective Dose ²	Time Period for Equivalent Effective Dose from Natural Background Radiation
Chest X-ray (PA film)	0.02	1	2.4 days
Skull X-ray	0.07	4	8.5 days
Lumbar spine	1.3	65	158 days
IV urogram	2.5	125	304 days
Upper GI exam	3.0	150	1.0 year
Barium enema	7.0	350	2.3 years
CT scan (head)	2.0	100	243 days
CT scan (abdomen)	10.0	500	3.3 years

1. Effective dose in millisieverts (mSv).
 2. Assumes an average “effective dose” from chest X-ray (PA film) of 0.02 mSv.
 3. Assumes an annual average “effective dose” from natural background radiation of 3 mSv in the US.

Source: European Commission, Radiation Protection Report 118, “Referral guidelines for imaging.” Directorate-General for the Environment of the European Commission; 2000.

MY ANGIOGRAM: CAUSE OF A FUTURE HEART ATTACK?

John W. Gofman, MD, PhD, Professor Emeritus of Molecular and Cell Biology at the University of California, Berkeley, is one of the world’s most distinguished medical and nuclear scientists. His research shows that no amount of radiation—no matter how small—is safe.¹⁸

Dr. Gofman’s data analysis conflicts with the National Academy of Sciences from the standpoint that he believes far more cancers are caused by medical radiation.



Further, he has come to the conclusion that exposure to radiation from medical procedures is a “highly important (probably principal) cause” of cancer and ischemic heart disease in America.¹⁸

How would radiation cause heart disease? According to Dr. Gofman, the same way it causes cancer. Radiation damages DNA—in this case, DNA in the arteries. The radiation-induced changes create a cancer-like phenomenon in the arteries known as atheroma.^{19,20} Dr. Gofman believes that the interaction between atheromas and lipids blocks arteries and causes blood clots.

One of radiation’s most striking effects is causing arterial cells to multiply abnormally. The abnormal growth of cells lining the arteries has the effect of narrowing the arteries.

Abnormal growth of smooth muscle tissue inside the artery creates something similar to scar tissue that occludes the arteries and ruins their flexibility. It is not cholesterol that “clogs” arteries—it is abnormal cell growth that narrows arteries. Lipid-laden cells, monocytes, macrophages, cholesterol, fibrin, collagen, elastin, and calcium are all components of plaques, and collect within damaged areas in the inner arterial wall.

As early as 1944, scientists showed that radiation could produce plaques and foam cells.²¹ Since then, additional studies have demonstrated that radiation can produce arterial lesions, sticky platelets, and increased free radicals.²²⁻²⁶ In fact, radiation can create atherosclerosis in its entirety.²⁷ Studies show that people who have undergone radiation of areas containing major blood vessels often develop atherosclerosis in those blood vessels.^{28,29}

So I hope you understand why I am so angry with the medical establishment. At the age of 27, doctors intentionally doused my heart with huge amounts of radiation in a medical procedure that made them a lot of money. This radiation makes it more likely I will develop coronary artery disease. As a result of this medically induced insult, I have to take extraordinary measures to keep all other heart attack risk factors in check.

A LETHAL MISCONCEPTION ABOUT ATHEROSCLEROSIS

The number-one killer in the United States is atherosclerosis, which is the cause of most heart attacks and strokes.³⁰⁻³² Yet doctors are utterly confused as to how this artery-blocking process occurs. Most cardiologists overlook the specific mechanism that inflicts arterial wall damage and the ensuing progression to occlusive atherosclerotic disease.

Most doctors think of an atherosclerotic lesion as a “clog” consisting of fat, cholesterol, and platelets that have accumulated on an arterial wall. So doctors tell patients to eat less fat, take a statin drug (if cholesterol levels are high), and use low-dose (baby) aspirin to prevent platelet aggregation. The problem with these approaches is that while they may postpone a heart attack or stroke, they fail to completely correct the underlying pathology that causes atherosclerotic lesions to form and progress.

If we are to be free of the ravages of atherosclerosis in our later years, this lethal misconception must be cleared up. Otherwise, there will be an epidemic of people in their seventies, eighties, and nineties receiving coronary “stents,” undergoing full-blown coronary bypass surgery, or dropping dead from heart attacks, strokes, kidney failure, and other disorders.



Cross-section of an artery demonstrating plaque. [enlarge image]

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THE FRAGILE ARTERIAL WALL

A popular medical website describes arteries as “hollow tubes” that are “smooth and elastic, allowing blood to flow freely.”³³ This is how healthy arteries look to the naked eye.

Under a microscope, however, you see what the illustration on this page shows: that the inner arterial wall comprises a thin layer of cells called the endothelium that acts as a barrier to keep the smooth muscle in the artery from direct contact with the blood. This barrier is important because many blood components are highly toxic to arterial smooth muscle that lies directly beneath the endothelium. When these damaging blood components attack the smooth muscle of the artery, the process of atherosclerosis is initiated.

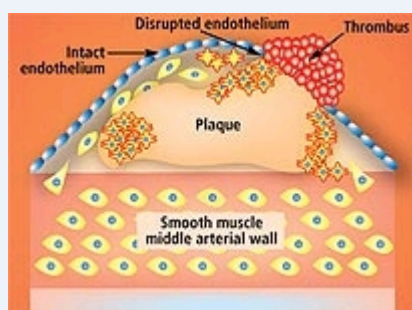
Among the blood components that are damaging to the inner lining of arteries are glucose, homocysteine, low-density lipoprotein (LDL), free radicals, and pro-inflammatory cytokines.³⁴⁻⁵⁰ To protect the artery's elastic smooth muscle against these damaging agents, it is critical to maintain an intact and properly functioning endothelium (or endothelial lining).

The endothelium can become dysfunctional at an early age because of poor health habits such as cigarette smoking, bad diet, and nutritional deficiencies.⁵¹⁻⁵⁷ The resulting disorder is called endothelial dysfunction, in which the cells that line the blood vessels fail to respond normally to increases in blood flow.

The most important term that you may ever learn in your life is endothelial dysfunction. It is the pathological condition that causes more Americans to suffer disability and death than any other phenomenon.

Atherosclerosis is both initiated and accelerated via the destructive process of endothelial dysfunction. Endothelial dysfunction can also be initiated by hypertension, free radical activity, chronic inflammation, and elevated homocysteine.^{37-44,58-77} Even those who practice a healthy lifestyle develop endothelial dysfunction if they live long enough.

ANATOMY OF THE ENDOTHELIUM



[enlarge image]

The endothelium is the barrier that guards the smooth muscles of the arteries against toxic components in the blood.

Once the endothelium is damaged, the smooth muscle of the artery becomes infiltrated with cholesterol, triglycerides, LDL, and platelets. A damaged endothelium is attacked by immune cells such as monocytes and macrophages, barraged by chronic inflammation associated with high levels of C-reactive protein and cytokines, and further injured by free radical and glycation reactions.^{35,78-81} Based on the many factors that contribute to endothelial dysfunction and subsequent atherosclerosis, it is obvious that statin drugs can at most be only partially effective over the long term.

Endothelial dysfunction is the initial event that starts the atherosclerosis process. As the endothelium becomes increasingly dysfunctional (and even denuded), the process of arterial occlusion and degradation occurs rapidly. Age-associated endothelial dysfunction can cause people in their seventies with relatively clean arterial walls to require “stents” or bypass surgeries when they reach their eighties.

Most cardiologists fail to treat their patients for endothelial dysfunction. The result is progressive occlusion of blood vessels in the heart, brain, kidneys, genitals, and other areas. This is accompanied by an increase in blood pressure, as the arteries lose their ability to youthfully expand and contract because the elastic smooth muscle has been damaged through the destructive process of endothelial dysfunction.

PROTECTING AGAINST ENDOTHELIAL DYSFUNCTION

Until now, aging people could slow the breakdown of the delicate endothelium, but could not adequately prevent it.

Folic acid, vitamin C, fish oil, and R-lipoic acid are just a few of the nutrients that help to maintain healthy endothelial function.⁸²⁻¹¹⁷ It is no coincidence that these same nutrients have been shown to reduce cardiovascular incidence in both animals and humans.¹¹⁸⁻¹²² Statin drugs and agents that suppress chronic inflammation also help protect the endothelium.

The most significant breakthrough in preventing and treating atherosclerosis may be the discovery of a nutrient combination that maintains healthy endothelial function.

WHAT THIS MEANS TO AGING HUMANS

People who lead a healthy lifestyle often develop a false sense of security that they will not suffer from circulatory disorders. One reason for this optimism is that sudden-death heart attack rates have declined dramatically since the mid-1960s.¹²³ Much of this can be attributed to declining tobacco use, improved diets, better control of hypertension, and increased use of supplements and drugs that lower heart attack risk.^{123,124}

What is happening is that people who would have suffered from blocked coronary arteries or a heart attack at the age of 50 are delaying this problem until later in life.

Atherosclerosis is usually associated with heart attack risk, but the scientific literature reveals that many disorders of aging are also related to circulatory disorders, including kidney impairment and memory loss.¹²⁵⁻¹²⁷ Sales of sex-enhancing drugs are spiraling mainly because so many men suffer from endothelial dysfunction that causes erectile dysfunction.¹²⁸⁻¹³¹

In this issue of *Life Extension*, we introduce the first multi-modal therapy designed to help prevent or partially reverse endothelial dysfunction. Cardiologists may initially reject this approach, as they did 22 years ago when we first recommended the use of low-dose aspirin, folic acid, and coenzyme Q10 to help prevent heart attacks.

The science behind this new concept of protecting against endothelial dysfunction is compelling. We predict that in the future, cardiologists will prescribe this novel therapy to a greater extent than they now do aspirin.

THE VALUE OF INFORMATION

When a cardiologist told me that I needed an angiogram at the age of 27, there was no one to turn to for guidance. Conventional medicine ruled in that era, and doctors were seldom challenged. If I could have just called an organization like the Life Extension Foundation back then, I would have been told that the ultrasound diagnostic procedure was far safer.

As a Life Extension member, you are armed with cutting-edge information that can enable you to make medical choices based on hard science—not on antiquated dogma or financial bias.

While some medical X-rays are unavoidable, you should inquire as to whether an ultrasound (sonogram), MRI (magnetic resonance imaging), or MRA (magnetic resonance angiography) might provide alternative imaging. You might also question whether a particular X-ray is necessary, as doctors often prescribe them merely to protect themselves from liability. This may be good for doctors as it confirms their diagnosis, but bad for you as your DNA can sustain irreversible damage.

Heart scans, CT scans, whole body scans, PET scans, and virtual colonoscopies all emit tremendous amounts of radiation and should not be used for routine screening. Even MRIs and MRAs emit electromagnetic radiation, but this may not be as dangerous as the ionizing radiation emitted by CT scans. Ultrasounds are completely safe.

Most people have never heard the term “endothelial dysfunction,” yet it is the leading cause of disability and death in the Western world. In this month’s issue, you will be the first to learn about specific steps you can take to mitigate this epidemic of arterial occlusive disease.

For longer life,



William Faloon

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