Nine Possible Causes of Rheumatoid Arthritis

by ANNA SCANLON

Nine Potential Rheumatoid Arthritis Causes

With contributions from Lana and Effie.

At this time, while there is ongoing research being conducted to try and identify the exact causes of rheumatoid arthritis (RA), there are still no concrete rheumatoid arthritis causes. From various findings, there is typically more than one reason as discussed in greater depth below.

The Role of Genetics

One theory is that genes and genetics are a factor. It can be difficult to say if this means RA is explicitly passed down or an umbrella of autoimmune diseases is passed from one generation to another.

It is often the case that autoimmune diseases in general run in families. So, if a parent has rheumatoid arthritis, their child may develop the disease or an entirely different health issue. Sometimes there are cases where a child may never develop the condition, showing that environmental triggers can be a big factor in turning on certain genes.

There is also some evidence that RA itself runs in families, but this hasn't been easy to pinpoint for a variety of reasons. Namely, because RA can be challenging to diagnose, there may be people who don't know they have the disease or have a propensity for it.

Likewise, because reaching a definite RA diagnosis is difficult, it isn't a disease that was widely diagnosed or treated before the last 20 to 30 years or so, making it even more difficult to observe genetic patterns.

There are also some theories to suggest that while genes do play a part, they are not the be all and end all of having the disease. Instead, some doctors believe that genes make a person susceptible to the disease, but that they can only get it due to outside factors.

These environmental triggers can mean being exposed to a certain infectious disease, such as a virus which is known to be a cause for juvenile idiopathic arthritis in children, smoking cigarettes or being around second-hand smoke, stress, emotional trauma, food allergies, and sensitivities.

The National Rheumatoid Arthritis Society in the UK says no one gene causes RA, but "more than 100 genes have now been identified and work is currently in progress to establish exactly what these genes do and how they interact with one another and environmental factors."

The society also states that there isn't one specific environmental factor that causes RA on its own.

"We can think of RA as being like a plant. First, it needs the soil in which to grow. The soil is equivalent to the

genetic factors. Then there are the seeds which have to be planted in the soil. The seeds are equivalent to the non-genetic risk factors. The richer the soil such as the more genes associated with RA a person has, the fewer the quantity of seeds needed for a plant to grow."

Also, since each person's body is different and not everyone has the same factors that impact them, finding targeted treatments that work for the long-haul has been a challenge for many patients, doctors, and researchers.

While some have achieved remission on medications on the market now, many are still in the trial-and-error phase where they need to bounce from one medicine to another, because either of bad side effects or the body gets used to the medication and it stops working as efficiently.

When patients find themselves at this plateau, they either move on to another drug or add another pharmaceutical to their existing regime under a doctor's supervision.

Intestinal Bacteria

Microbiome is the name of the bacteria that live in the intestinal tract. Some microbiomes are good bacteria while others are not. Every person regardless if they have a particular illness or not, are hosts to trillions of these microbiomes.

Researchers have identified gut bacteria that may trigger RA. A type of intestinal bacteria called *Prevotella copri* has been linked to the onset of RA, according to researchers from NYU Langone Medical Center and New York University School of Medicine.

While the bacteria have been found in people with new-onset, untreated rheumatoid arthritis, other findings tell that those patients with chronic treated rheumatoid arthritis showed a significant decrease in the amount of this bacteria.

According to a study done by Dr. Dan Littman and researchers at New York University School of Medicine, they examined DNA in 114 stool samples from both healthy people and those who had rheumatoid arthritis or psoriatic arthritis. The study explains that they identified gut bacteria by taking DNA from these samples to compare and analyze a specific gene that plays on bacteria.

The conclusion of the study found that "75 percent of people with new-onset, untreated rheumatoid arthritis had the bacterium *Prevotella copri* in their intestinal microbiome. In comparison, it was present in 12 percent of people with chronic, treated rheumatoid arthritis, 38 percent of people with psoriatic arthritis, and 21 percent of those in the control group."

This further explains how the body can change over time. If a chronic, treated rheumatoid arthritis patient isn't showing high markers of *Prevotella copri*, they may have other bacterial microbiomes that are impacting their RA symptoms and progression of the disease.

Next page: More potential rheumatoid arthritis causes.

Dental Health

Periodontal Disease

Researchers suspect periodontal disease may trigger RA. Periodontal disease is a chronic inflammation of the gums and bones that support teeth.

A 2016 study from Johns Hopkins suggests the bacteria that causes gum inflammation can start a chain of events leading to the development of RA.

Root Canals

This is a common dental procedure, especially in the United States. There have been controversies attached to this as many doctors and researchers, either agree or disagree with this claim.

Many rheumatoid arthritis patients have also noticed significant changes to their health once a root canal procedure was done. Studies on this haven't been researched extensively, and because of this the cause and effect have been dismissed by the medical community.

On the other hand, it has been noticed that some people are just more sensitive than others when it comes to any form of dental procedures. What causes one person to be more in pain or risk infection, is complicated as many factors overlap one another.

Biological dentists, who take a more alternative and holistic approach, believe that once a root canal procedure is completed the antibiotics given to treat and heal the area aren't able to reach the bottom of the roots.

These roots are called tubules – microscopic channels that radiate from the underside of the enamel surface to the inside of the tooth, called the pulp. This is the area believed where the bacteria left untreated by antibiotics once the tooth is closed up with an implant, continue to thrive silently, unnoticed.

According to the American Association of Endodontists, the root canal theory is simply a myth: "this false claim was based on long-debunked and poorly designed research conducted nearly a century ago, long before modern medicine understood the causes of many diseases. There is no conclusive, scientific evidence linking root canal treatment to disease elsewhere in the body."

To say if your root canal sparked your rheumatoid arthritis or made it worse, can be hard to pinpoint. Each person's dental history is unique, so some patients may benefit from root canal removal if tests show that indeed there is an infection. Other times it's hard to know if there is an infection until the tooth is pulled.

Hormones

More women than men develop RA, which leads many doctors to believe that RA may be a result of female hormones. However, this is inconclusive at the moment as there may be other factors that lead to a lower diagnosis rate amongst men.

There is speculation that men do not report their symptoms as often or as readily as their female counterparts, making it possible that many more men have RA than is actually reported or thought. Because RA is associated with women, many men may feel embarrassed to admit they have the disease.

One reason why women are believed to be impacted by hormones is that there is an increased risk of developing the condition after childbirth. Many patients who are women found themselves seeking a rheumatologist after their first, second, and/or third child.

The reason this happens is still unclear but fluctuating hormones woman experience after childbirth along with the trauma during delivery can spark the condition to arise during healing if a woman is genetically susceptible and has other factors at play during the time.

Existing chronic rheumatoid arthritis patients find that during childbirth their symptoms go into remission, only to shortly experience a resurgence of the symptoms ten-fold leading many women to go back on their medications during breastfeeding since the symptoms are aggravating.

Age, Other Autoimmune Diseases, and Infections

Most people who develop rheumatoid arthritis are within the age range of 40-60, which is an increasing risk factor for RA. RA can and does occur at any age, however, this is the most common age range in which it does.

Another risk factor is having another autoimmune disease. Most people who develop RA already have another autoimmune issue, thus making a compound problem.

This is mainly caused by the inflammatory processes and mechanisms that many autoimmune conditions share. This is why medications used to treat rheumatoid arthritis, have been used to treat different conditions. The underlying theme is that they all share similar foundations in how they are manifested and progress.

RA can also begin as a result of an infection, as mentioned above. If there is a viral infection within the body and the body does not stop working to combat the illness even after it is gone, it can lead to the cellular mimicry factor as discussed. This likely occurs in tandem with people who already possess the genetic components that can lead to RA.

Next page: More information on other possible rheumatoid arthritis causes.

Smoking

Smoking is perhaps the one risk factor of RA that is controllable, as all others are factors are that one cannot change.

The National Rheumatoid Arthritis Society states that smoking with RA can be especially dangerous because it increases the risk of the disease activity beginning to occur outside of the joints. This can include problems with blood vessels, the lungs and include nodules. Many rheumatologists advise that patients quit smoking entirely.

Additionally, the risk of death due to a complication associated with RA shoots way up with smokers, meaning it is probably best not to take up smoking.

However, the problem lies within the fact that many people find smoking soothing to their joints and that it offers temporary relief to the pain caused by RA.

Everyday stressors can be hard to cope with leading people to search for an easy escape. Add chronic illness to the mix and these stressors can increase making it harder – for smokers – to quit. For that reason, many people with RA will continue to smoke despite the evidence to suggest its danger to those with the condition.

Having a good support system and medical team, however, can help motivate a patient to change their lives around in order to thrive and live well with the condition.

Job Stress

New evidence shows certain jobs may increase some workers' risk for developing RA, this according to findings reported in *Arthritis Care & Research.*

Jobs that are labor intensive or expose someone to chemicals, increase a person's risk for developing RA up to three times more than office jobs.

Other environmental triggers in the workforce such as mold and bad air ventilation in office buildings can slowly wreak havoc on a person genetically sensitive. Existing chronic patients on medication that lowers the immune system can be greatly impacted as well.

Psych Central stated that "long-lasting stress may lead to pro-inflammatory effects because no adequate long-term anti-inflammatory responses are available."

Whether stress is from a job, personal matters or some traumatic event, the underlying theme is that over time it puts the body in overdrive, spiking cortisol which leads to burnout. An increase in cortisol drives the inflammatory process even further.

Trauma

Post-traumatic stress disorder (PTSD) is known to be a factor in the development of several physical, mental and emotional difficulties, as stated by Healthline.

The link between RA and trauma is still unclear. Several reasons have been studied such as pre-existing mental and emotional conditions, mourning the loss of a healthier time period in one's life, and dealing with every day of chronic pain and inflammation.

Dr. Yvonne C. Lee and colleagues from Harvard Medical School in Boston found that "women who had four or more symptoms of PTSD were also at a higher risk for developing RA compared with those who had no or little exposure to any kind of trauma."

Other studies by different doctors and researchers have shown RA may be associated with traumatic physical events, such as a car accident or surgery. The research reported in the journal, *Rheumatology*, finds the onset can be from as early as six months to two years after the trauma.

Veterans who have worked in the military also have shown signs of inflammatory disease, leading to more evidence of the PTSD connection theory.

A study done in 2015, by Joseph A. Boscarino, Ph.D., of the Geisinger Clinic in Pennsylvania said that the link between veterans being diagnosed with PTSD and RA, "could be a potential piece of the complex puzzle surrounding autoimmunity."

Air Pollution and Other Toxins

Several studies have connected an increased risk for the development of RA to areas with high traffic and smoke pollution, such as major cities.

According to the *U.S. National Library of Medicine National Institutes of Health*, "RA was found to be higher in urban areas. Living near air pollution emitters was associated with higher risks of developing RA and of producing RA-specific autoantibodies."

Researchers don't know exactly what connects pollution to RA, but they think it increases the risk of inflammation.

They go on to state that, "air pollution not only triggers innate immune responses at the molecular level, increasing the levels of pro-inflammatory cytokines and reactive oxygen species, but is also involved in adaptive immune responses."

This gives a clear indication that the environment we live in can impact our health, even when we are not aware of it immediately.

Toxins, including insecticides, have also been linked with the development of RA.

Rheumatoid Arthritis Causes: Overview

RA is often referred to as a jigsaw puzzle, or perhaps even "the perfect storm." Several different risk factors may need to be present in order to develop rheumatoid arthritis.