

Raynaud's Phenomenon *by Charles Henderson, M.D.*

A young woman in her twenties is making a late-night run to the grocery store. She reaches into the grocer's freezer for some Rocky Road ice cream and notices her fingers turn a blue color and become numb. A grandmother dreads playing out in the snow with her grandchildren because of the blanching and discomfort in her fingertips that the cold temperatures will cause. What these women are experiencing is called Raynaud's phenomenon. It is a common condition affecting 3–5% of the population, primarily women. It occurs when the body has an abnormal response to temperature or emotional stress, resulting in dramatic color changes. Is Raynaud's merely a nuisance, or is it a signal that something more serious is happening in the body? What causes these symptoms and what can be done to lessen the effects on one's daily life?

What is Raynaud's?

The most prominent feature of Raynaud's phenomenon is the characteristic color changes. Severe arterial spasm results in complete interruption of the blood supply to the involved digit, resulting in a blanching of the involved digit, an event sometimes called a "white attack." Alternatively, the blood supply may be only partially interrupted, and a small amount of poorly oxygenated blood stagnates in the fingers, causing a blue discoloration that persists for about 15 minutes after rewarming. Upon rewarming, the involved skin develops a bright red blush as blood flow is restored. During a Raynaud's episode, patients may experience numbness, tingling and clumsiness of the fingers. Pain in the digits is often a warning sign that the loss of blood supply is reaching a critical level and will result in tissue damage if circulation is not restored quickly.

What causes Raynaud's?

The answer to this question lies in the fact that the skin

possesses a unique blood flow system that maintains normal body temperature, a system referred to as "thermoregulatory circulation." This system allows precise regulation of body temperature. Small nerve fibers in the skin relay information about the surrounding temperature to the brain. The brain responds to low temperatures by stimulating the sympathetic nervous system (the so-called "fight or flight" response) that constricts blood vessels in the skin. The result is that warm blood is diverted away from the skin, where most heat is lost, thus maintaining the core temperature. Most of these thermoregulatory blood vessels are present in the fingers, toes and face, and therefore these areas are most affected by temperature changes. Raynaud's phenomenon is believed to result from a hyperactive response to the sympathetic nerve stimulation in these blood vessels. Interestingly, the sympathetic (fight or flight) nervous system is also activated by stress or fear, possibly explaining why Raynaud's can be triggered by emotional changes.

Diagnosis and

Treatment of Raynaud's

Patients with Raynaud's phenomenon should have a full evaluation by their physician to determine if the symptoms represent a benign condition (primary Raynaud's) or are associated with an underlying connective tissue disease such as scleroderma, dermatomyositis or lupus (secondary Raynaud's). The difference is determined by historical features, physical exam findings and laboratory studies. Primary Raynaud's is usually of early onset (under age 30), symmetrical in pattern, and lacks pain or skin ulcers. On the other hand, secondary Raynaud's is more likely of late onset (after the age of 40), asymmetrical and sometimes associated with ulcers at the fingertips. Secondary Raynaud's requires



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Charles F. Henderson, MD

Education

- Medical school: University of Medicine and Dentistry of New Jersey
- Residency: Family Practice Residency, Dayton, Ohio
- Residency: Internal Medicine Residency, York Hospital, York, Pennsylvania
- Fellowship: Rheumatology, Johns Hopkins, Baltimore, Maryland

Highlights

- Board-certified in Family Practice and Internal Medicine
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additional diagnostic testing to discover an underlying cause.

Most cases of Raynaud's can usually be managed without medication. The most important intervention involves keeping the core body and the affected digits warm. Hats, gloves and layered clothing should be worn during exposure to the cold weather. Smoking should be avoided because nicotine causes blood vessel spasms. If symptoms are severe, there are several prescription drugs that may decrease the number, duration and severity of attacks. Medi-

cations that work by dilating blood vessels include calcium channel blockers (also used for elevated blood pressure), nitroglycerin and medicines used for erectile dysfunction such as sildenafil (Viagra). Antidepressants that affect serotonin levels, such as fluoxetine (Prozac), have demonstrated benefit, perhaps because of their effect on emotional responses. Surgical ablation of sympathetic nerve fibers is reserved for severe cases that are not responsive to medications.

Although Raynaud's phenomenon is usually a benign condi-

tion, it can occasionally alert the physician to the presence of a serious underlying condition that requires extensive evaluation and treatment. The women in both vignettes should notify their physicians of their symptoms, and if warning signs are present, further evaluation should be pursued. Both women should avoid environmental triggers and maintain core body temperature. By using common sense and cautious surveillance, the symptoms can likely be managed without long-term complications.