As summer days linger, more people tend to spend their leisure time outdoors. With this increased activity comes potential exposure to poison ivy, oak, and sumac, all of which are common causes of allergic contact dermatitis. Poison ivy and its cousins are members of the Toxicodendron species, and are found throughout the U.S., northern Mexico, and southern Canada in varying locations and climates. Most people have some level of sensitivity to poison ivy, and while reactions typically aren’t serious, they can be quite uncomfortable. Patients seeking relief from the effects of poison ivy, oak, and sumac will be comforted by the options available for treatment and even prevention of future outbreaks.

Physiology of Allergic Contact Dermatitis

Allergic contact dermatitis (ACD) is a cell-mediated response to exposure to an antigenic substance. While many contact allergens are weak and require repeated exposures to establish sensitization, the urushiol found in Toxicodendron plants is a strong antigen, typically requiring only two exposures to establish sensitization in susceptible individuals.

The first exposure is called the sensitization phase, and occurs when the urushiol has contact with the skin and penetrates the epidermal layer. The antigen then attaches to the Langerhans’ cells, which migrate to the lymph nodes and the T lymphocytes, which develop recognition of the antigen.

The second phase, known as elicitation, occurs when a previously sensitized individual again comes into contact with the antigen. The Langerhans’ cells react with the T lymphocytes, resulting in a proliferation of the antigen-specific T lymphocytes. Inflammatory mediators are released, and an allergic response generally occurs within two days of exposure. Untreated, these reactions can last several weeks and cause a great deal of discomfort.1

Manifestations of ACD to Poison Ivy

Exposure to urushiol-containing plants generally results in a pruritic, papulovesicular rash at the site of contact. Initial lesions are papular, often becoming vesicular in nature within a few days. The rash may
grow in size during the first two weeks after presentation. Lesions vary in intensity due to the thickness of the skin, the length of exposure, and the sensitivity of the individual. Often, the rash can have a linear appearance if there has been direct contact to the plant. The rash may be more spread out if exposure was a result of contact to the foliage, such as a hike or camping trip. 

Prevention

Avoiding physical contact with poison ivy, oak, and sumac is obviously the most ideal type of prevention. Patients should be able to readily recognize Toxicodendron plants, beyond looking for “leaves of three.”

- **Poison ivy** is mostly found east of the Rocky Mountains and may grow as a bush, plant, or tree-climbing vine. The leaves usually grow three leaflets to a stem but vary greatly in color and shape. Poison ivy may produce small, green flowers and red or white berries. 
- **Poison oak** is common to the West and Southwestern regions of the U.S. and grows as a low plant or bush. Like poison ivy, poison oak grows three leaflets to a stem, but its leaves resemble oak leaves.
- **Poison sumac** is common in Southern swamps and Northern wetlands, and it grows as a bush or small tree. It has two rows of leaflets on each stem and a leaflet at the tip. Unlike other types of sumac, its leaves have smooth edges.

Dressing appropriately is important when a person is involved in activities that increase the risk of exposure, such as a hike or camping trip. Wearing long pants, sleeves, boots, and gloves can reduce the chance of exposure. Skin-barrier products containing quaternium-18 bentonite (such as Ivy Block) may keep the urushiol from penetrating the skin.

Another option for prevention that is gaining popularity is that of annual oral Rhus toxicodendron immunization. This technology, known as hyposensitization, is actually not new but has only recently resurfaced as a viable and valuable treatment option. Allergenic extracts containing small amounts of the offending antigens have been in use for nearly a century and were common practice in the prevention of poison ivy ACD until the mid-1980s. In February of 1986, the U.S. Food and Drug Administration revoked licensure of all injectable toxicodendron allosensitizers products. Oral products were classified as Category I, indicating that they had been determined safe and effective, though no commercial product was ever introduced.

Today, many compounding pharmacists prepare oral Rhus toxicodendron solutions to be taken in the late winter, while poison ivy is still dormant. Once the initial loading dose is given, a maintenance dose may be warranted for patients who are unusually sensitive or who are at high risk for exposure. Solutions are made from a Rhus toxicodendron mother tincture, which is diluted in a 7% ethyl alcohol base and administered sublingually. Recommendations may vary slightly as to the maintenance-dosing schedule, but the loading dose should be given sometime in the month of February.

Treatment

The first step in successful treatment after poison ivy exposure is a thorough cleaning of all materials that may have come into contact with the plant, as urushiol may crease the risk of exposure, such as a hike or camping trip. Wearing long pants, sleeves, boots, and gloves can reduce the chance of exposure. Skin-barrier products containing quaternium-18 bentonite (such as Ivy Block) may keep the urushiol from penetrating the skin.

For mild cases, oatmeal baths and baking-soda mixtures can soothe the discomfort. Topical glucocorticoids may be used, though menthol, camphor, or phenol can reduce discomfort. Products containing aloe and calendula are also soothing to the skin. Systemic treatment is often reserved for more severe symptoms of ACD. Antihistamines given orally can be helpful, particularly at night. If greater than 10% of the skin is affected, oral glucocorticoids may be used in conjunction with topical preparations.

Conclusion

Poison ivy, poison oak, and poison sumac grow rampantly in various parts of the country during the summer and early fall. Patients need to be able to identify these plants easily to decrease their risk of exposure. Those who are highly sensitive to the effects of urushiol should consider other preventive measure, such as spring oral immunization and barrier lotions. Treatment of poison ivy with topical and systemic therapies may help patients to feel more comfortable after exposure and may help shorten the duration of symptoms.

References

1. Allen PL. Leaves of three, let them be: If it were only that easy! Dermatol Nurs 2006; 18(3): 236–242.