

Allergic Contact Dermatitis

Allergic contact dermatitis is an inflammation of the skin caused by contact with external irritants such as animal, plant, mineral, or chemical substances. It can be little pimples, little fluid filled vesicles, or a red rough scaly patch. Allergic contact dermatitis usually has itching and that rash due to contact, which is not allergic but more of an irritation, is often not itchy. Any part of the body can be affected, obviously those parts which are in contact with the allergic substance or the irritant.

People who are prone to allergy, called atopic, are much more likely to develop allergic contact dermatitis than those not so prone, or those not from allergic families. However, the skin of any non-allergic prone individual can become sensitive if the agent is applied in sufficient amount or a sufficient period of time under certain circumstances.

The initial reaction may occur after only a large exposure, but once a person is sensitized, subsequent reactions of the skin may occur with minimal exposure. Topical medical treatments and synthetic chemicals can also be sensitizing agents. For example, Merthiolate applied to a small cut, or Butesinpicrate applied to a small burn, can cause contact dermatitis. Other common sensitizers found in medications are Formalin, Novocaine, Benzocaine, and Phenol.

Irritant contact dermatitis will occur in all people if the contactant is of sufficient strength and if it is applied to the skin for a long enough period of time. The duration of time required to produce a reaction depends primarily upon the innate irritant properties of the contactant and of its concentration. In individuals, constitutional predispositions also play a role in that some persons because of the nature of their skin are more susceptible to the development of irritant contact dermatitis.

If the original area of allergic contact dermatitis is irritated or made worse, then new sights of rash may appear and they may be far away from the original area of contact of the irritant with the skin. The severity of the reaction depends upon the duration of the contact. The agent causing the inflammation will produce the allergic reaction within minutes to hours following the contact of desensitization. The more frequently that a person has contact with a particular irritant, the more rapidly the subsequent reaction will come on, and the more violent the reaction will be. In prolonged or recurrent situations where the contact with the causative substance occurs, then the skin becomes very thick, dull, red, scaly, and chronically itchy. This progression of the rash becomes more difficult to clear completely because of a general nonspecific increase in susceptibility to irritants of all kinds, which develops. This is called "polyvalent sensitivity" to any and all irritants and will progress to a chronic irreversible skin condition and the individual may become chronically handicapped.

The continuous use of cortical steroid creams, anti-itch medicine, and other antipathic drugs will obscure the rash or make it more tolerable. However, the down side is that it takes the urgency out of finding the cause of the rash and therefore the person allows a persistent contact to develop resulting in a very severe chronic skin condition. Therefore, it is important to do skin testing to determine the cause of such a rash when it is recurrent and resistant to dietary changes, necessary nutritional supplementation, and appropriate environmental controls.

Sensitivity in general increases with continued or recurrent exposure and diminishes with decreased or a lack of exposure to the irritant or allergen. The following is a listing of agents that commonly cause allergic contact dermatitis:

- Nickel sulfate in jewelry and fasteners
- Potassium dichromate in leather products and shoes
- Neomycin sulfate in topical medications, deodorants, and cosmetics
- Ethylenediamine in topical agents
- Thimerosal in preservatives
- Benzocaine in local anesthetics and topical agents

- Mercury in topical agents, antiseptics, industries, and cosmetics
- Wool, wax, and alcohol present in Lanoline
- Paraban mixture present in preservatives and cosmetics
- Formalin present in choline, shoes, and silks
- Paraphenylenediamine in hair dyes and leather
- Mercaptobenzothiazole present in rubber
- Thiuram present in rubber

Treatment of acute allergic contact dermatitis involves cold compresses if there is oozing or crusting of the lesions. Burow's solution in a dilution of 1 to 20 can be prepared from tablets or powders using one tablet or packet of powder to one pint of cold water for the compression. This is applied four times daily for a fifteen-minute period. Thereafter, the area is allowed to dry and a potent glucocorticoid cream is applied sparingly without excessive rubbing. This is continued until the acute and major inflammation has subsided. Then, a small dose of 1% hydrocortisone on a once or twice daily basis is recommended until the inflammation has satisfactory resolved.

Other sensitizers in rubber include Naphthyl in Carba. Moreover, turpentine epoxy resins in Balsam of Peru are sensitizers.

The identification of contact allergens will help to alleviate a good deal of suffering, discomfort, lost time, and cost of medical visits if the affected person is able to identify and avoid the agent causing the problem. The technique employed for identification of contact allergen is called the Allergen Patch Test. This is done by applying a group of chemicals to the back as a group along with a negative control. The test we use requires no preparation; the standardized allergens and allergen mixtures are already incorporated into a hyper-allergenic dehydrated water absorbing gel attached to the waterproof backing of the patch that is applied to the skin.

After application of the test, perspiration and water coming through the skin quickly rehydrates the dried gel layer, which results in the release of the allergens onto the skin. After 48 hours, the test patch is removed and the reactions are then interpreted at three to four days after test application. The homogeneous distribution of the allergens on the back helps to minimize the potential for false positive and irritant reactions. To help ensure accurate testing and interpretation, the placement of allergens is standardized by the supplying company. Allergen stability has been confirmed by invitro studies and an optimized allergen dose level has been determined by invivo dose response studies.

The allergen doses in the test kit that we use are sufficient to elicit allergic reactions in weakly sensitized patients yet are low enough to minimize the risk of causing test induced sensitization. Each allergen patch is attached to an impermeable, flexible plastic backing that promotes optimal contact between skin and allergen, thereby maximizing allergen penetration. The occlusive backing and allergen patches are held firmly in place by a single piece of non-woven hypoallergenic, semi-occlusive surgical tape. Because the test kit is standardized, it is believed to perform consistently and reproductively, with minimal risk for adverse reactions. When these do occur, although rarely, then topical cortical steroids or oral anti-itch or anti-inflammatory medications can be used.