

## Oral Medicine / Pathology

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# IRRITANT CONTACT DERMATITIS DUE TO USE OF LATEX GLOVES - A CASE REPORT

## Abstract

### || Brief Background

The present paper describes about a case report on allergic reactions on skin, or irritant contact dermatitis, due to the use of latex gloves: its causes, manifestations, diagnosis, treatment and prevention.

### || Materials and Methods

Cornstarch pre-powdered latex examination gloves. Latex used for the manufacture of gloves, catheters, Ryle's tube and the types of latex used are hardened rubber, dipped latex, etc. Flucinolone ointment, skin test, and blood test.

### || Discussion

Discussion deals with the pros and cons of the materials used, the signs and symptoms, allergic reactions to the use of cornstarch pre-powdered gloves and risk factors associated with irritant contact dermatitis and treatment aspects.

### || Summary and Conclusions

The use of pre-powdered latex examination gloves can cause latex allergy. Such allergic reactions, which are on the rise, may range from sneezing or a runny nose to anaphylaxis, a potentially life-threatening condition. Understanding latex allergy and becoming familiar with common sources of latex can help you prevent your own allergic reactions or those of others.

### || Key Words

Irritant contact dermatitis, latex allergy, anaphylactic shock symptoms, etc.

## || Introduction

Latex allergy is a reaction to certain proteins found in natural rubber latex, a product manufactured from a milky fluid derived from the rubber trees (*Hevea brasiliensis*) found in Africa and Southeast Asia. If you have latex allergy, your body mistakes latex for a harmful substance. Latex allergy may cause allergic reactions ranging from sneezing or a runny nose to anaphylaxis, a potentially life-threatening condition. Understanding latex allergy and becoming familiar with common sources of latex can help you prevent your own allergic reactions or those of someone else.

## || Causes

In a latex allergy, your immune system identifies latex as a harmful substance. Your immune system triggers certain cells to produce immunoglobulin E (IgE) antibodies to fight the latex component (the allergen). The next time you come in contact with latex, the IgE antibodies sense it and signal your immune system to release histamine and other chemicals into your bloodstream. These chemicals cause a range of allergic signs and symptoms. Histamine is partly responsible for most allergic responses, including runny nose, itchy eyes, dry throat, rashes and hives, nausea, diarrhea, labored breathing, and even anaphylactic shock.

Latex sensitivity can occur in the following ways:

**Direct contact.** The most common cause of latex allergy is direct contact with latex, such as by wearing latex gloves or by contact with latex-containing products. Once you've had direct contact with latex, you may become sensitized. Sensitization is the process in which the immune system learns to recognize and attack allergens, causing an allergic reaction.

**Inhalation.** You can develop a latex allergy by inhaling latex particles. Latex products, especially gloves, shed large amounts of latex particles, which can become airborne. Cornstarch is sometimes used on the inside of gloves to make them easier to put on and take off. The cornstarch absorbs latex proteins, but when the gloves are snapped during application or removal, the latex-laden particles fly into the air. The amount of airborne latex from gloves differs greatly depending on the brand of glove used.

## || Types of latex

Manufacturers produce two types of products from natural latex sources:

**Hardened rubber.** This type of latex is found in products such as athletic shoes, tires and rubber balls. Hardened rubber doesn't cause allergies in most people.

**Dipped latex.** Latex of this kind is found in some products that are "stretchy," such as rubber gloves, balloons, and rubber bands. Most allergic reactions to latex occur with products made of dipped latex because they're often used directly against the skin.

Not all latex products are made from natural sources. Products containing man-made (synthetic) latex, such as latex paint, are unlikely to cause a reaction because they aren't used against the skin and don't contain the natural substance.

## || Signs and symptoms

People who are allergic to latex often have a reaction after being in contact with the latex in rubber gloves. Three types of reactions can occur with latex gloves:

### 1] Irritant contact

**Dermatitis.** This common reaction to protective gloves isn't an actual allergy. It's most likely due to sweating or rubbing under the gloves or from detergents left on your hands before wearing them. This rash occurs most often in people who wear protective gloves, such as dental and health care workers. Irritant contact dermatitis usually makes your skin appear red, dry and cracked.

### 2] Allergic contact

**Dermatitis.** This is a reaction to the latex or chemical additives [Thiuram, Carbamates, MBT] used during the manufacturing process. The chemicals added to latex can cause a skin rash 24 to 48 hours after contact. The rash usually starts on the parts of your skin that have come in contact with latex, and then may spread to other areas. You may also have oozing blisters.

### 3] Hypersensitivity immune Response.

This response is an actual latex allergy. It occurs when your immune system reacts to proteins found in natural rubber latex. In a latex allergy, exposure to latex may cause immediate reactions, such as itching, redness, swelling, sneezing and wheezing.

Exposure to airborne latex particles, often sent into the air when removing latex gloves, can cause signs and symptoms similar to those of hay fever or asthma:

- » Stuffy nose
- » Cough
- » Hives or rash
- » Itchy and watery eyes
- » Difficulty breathing

**|| Anaphylactic shock symptoms**

The most serious allergic reaction to latex is an anaphylactic response, which can be deadly. Anaphylactic reactions develop immediately after latex exposure in highly sensitive people and cause the airways (bronchi) to constrict, making it difficult to breathe. Blood pressure may drop to life-threatening levels, making you feel dizzy or causing you to lose consciousness. Other serious signs and symptoms include:

- » Wheezing
- » Confusion
- » Slurred speech
- » Rapid or weak pulse
- » Blueness of your skin, including your lips and nail beds
- » Diarrhea
- » Nausea and vomiting

Seek emergency medical care if you think you're having an anaphylactic reaction<sup>2</sup>.

**|| CASE PRESENTATION**

The following case is of a 26 year old dental student who gradually developed irritation which later developed into blisters and cracking on dorsal surface of the hand, consistent with the use of pre-powdered latex examination gloves. There was no previous report of such type of reaction with the use of the same type of gloves.

- » The clinical features were suggestive of irritant contact dermatitis.
- » The student was told to immediately stop wearing these gloves.
- » The skin lesions were treated by local application of flucinolone (0.0025 w/w) ointment for a period of 1 month.
- » He was advised to wear powder free low latex protein gloves.

**|| Risk factors**

It isn't clear why some people develop allergies while others don't. However, certain people are at greater risk of developing a latex allergy:

**Children with spina bifida.** The risk of latex allergy is highest in children with spina bifida - a birth

defect that affects the development of the spine. Children with this disorder often are exposed to latex products through early and frequent health care. About half of all children with spina bifida are allergic to latex.

**Health care workers.** If you work in the health care field, your chances of developing an allergy are higher. The signs and symptoms of latex allergy may be similar to those of occupational asthma, a lung disease caused by inhaling workplace substances.

**People with a food allergy.** Latex allergy is also related to certain foods. Foods such as avocados, bananas, chestnuts, kiwis and passion fruits contain some of the same allergens found in latex. If you're allergic to latex, you have a greater chance of also being allergic to these foods.

People with a family history of allergies. You're at increased risk of latex allergy if other allergies, such as hay fever or hives, are common in your family<sup>3</sup>.

**Screening and diagnosis** – along with proper history, following tests confirm the diagnosis.

**|| Tests:**

**Skin test.** A test in which your skin is pricked and exposed to latex can determine your reaction to latex. In this test, small amounts of latex are placed on the skin of your forearm or back. Your skin is then pricked with a needle, to allow a tiny amount of the substance beneath your skin surface. If you're allergic to a particular substance being tested, you develop a raised bump or reaction. Only specialized allergy centers are able to perform skin tests for latex allergy.

Radioallergosorbent for type I hypersensitivity reaction and Patch test for type IV hypersensitivity.

**Blood test.** A blood test can measure your immune system's response to latex by assessing the amount of allergy-type antibodies in your bloodstream, known as immunoglobulin E (IgE) antibodies. Your blood sample is sent to a medical laboratory, where it can be tested for sensitivity to latex<sup>4</sup>.

**|| Treatment**

Although medications are available to reduce the symptoms of latex allergy, there is no cure for latex allergy. Treatment is based on prevention. The only way to prevent an allergic reaction is to avoid products that contain latex.

However, despite your best efforts, you may come into contact with latex that causes a severe reaction. In this case, you may need an emergency injection of adrenaline (epinephrine) and a trip to the emergency room. If you have a severe allergy, you may need to carry injectable epinephrine with you at all times. For less severe allergies, you may prescribe corticosteroids, antihistamines, which you can take after exposure to an allergen to control your reaction and help relieve discomfort. Creams may relieve skin reactions brought on by a latex allergy<sup>5</sup>.

### || Prevention

The best way to prevent an allergic reaction is to avoid latex. Take these measures:

Reduce your exposure. Limit the number of latex products you come in contact with. Most latex products have suitable alternatives.

**Talk to your employer.** Discuss reducing the number of latex products you might come in contact with at work.

**Choose alternative Gloves.** If you must wear gloves at work, choose gloves made without latex. Vinyl gloves work in many situations, but aren't as effective at protecting you from hepatitis or HIV transmission. Many other types of synthetic gloves work just as well as latex gloves for stopping disease transmission, but they can be more expensive.

Use nonlatex gloves for activities that are not likely to involve contact with infectious materials (food preparation, routine housekeeping, maintenance, etc.) Appropriate barrier protection is necessary when handling infectious materials.



Fig. (1) Irritant contact dermatitis



Fig. (2) One Week after discontinuation of gloves and use of flucinolone



Fig. (3) One Month after discontinuation of gloves and use of flucinolone



Fig. (4) Three Months after discontinuation of gloves and use of flucinolone

If you choose latex gloves, use powder-free gloves with reduced protein content. When wearing latex gloves, do not use oil-based hand creams or lotions (which can cause glove deterioration) unless they have been shown to reduce latex-related problems and maintain glove barrier protection.

Avoid inhaling latex. Stay away from areas of your workplace where other workers may be wearing latex gloves. Request that the people you work with use gloves that aren't powdered with cornstarch. Wear a medical alert bracelet. Always keep identification on you or with you that clearly alert others of any allergies you have.

| Non-latex gloves: |   |
|-------------------|---|
| Brand Name        | Material                                    |
| Dermaprene        | Neoprene (polychloroprene polymer)          |
| Neolon            | Neoprene (polychloroprene polymer)          |
| Elastyren         | Styrene butadiene block polymer             |
| Tactylite         | Styrene ethylene butadiene block co-polymer |
| Pure advantage    | Nitrile (butadiene co-polymer)              |
| Allegard          | Styrene butadiene block polymer             |

Be wary of products labeled 'hypoallergenic.' These products don't contain latex. In this context, "hypoallergenic" usually indicates fewer chemicals were used in the latex production process.

### || Conclusion

The use of pre-powdered latex examination gloves can cause latex allergy. Such allergic reactions, which are on the rise, may range from sneezing or a runny nose to anaphylaxis, a potentially life-threatening condition. Understanding latex allergy and becoming familiar with common sources of latex can help you prevent your own allergic reactions or those of someone else. It would be better to resort to preventive ways and the best way is to limit exposure to latex products or find a good alternative.

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