

Latex allergy – a sensitive word for medical experts.

The number of people suffering from allergies world wide increases dramatically each year. However, it is not only patients who suffer, but medical staff too. Latex allergies, in particular, have become an increasing cause for concern.

For example, in Germany alone, the current number of people with allergies is estimated to be around 30 million, and growing. In comparison, the number of latex allergies is relatively low. According to international estimates less than one percent of the overall population suffers from type I allergies (i.e. caused by latex based products). In the groups most at risk, including the medical profession, it amounts to no more than 10%.

The cause of latex allergies stems from proteins, although this is not exclusive to latex proteins. Evidence shows that cross reaction between latex and exotic fruits, such as pineapples, avocados, bananas, kiwis, mangos and melons in particular, but also sweet chestnuts and peaches is common. Prick tests on 76 patients with a type I allergy to latex showed a positive result for at least two of these fruits on 52 people. Latex allergy is however not an entirely new subject. In the 1930's, papers were produced on "rubber

allergy" for the first time. The figures shown for people with latex allergies has however increased enormously. The reason for this increase is due to the growth in the use of medical gloves, as a result of the rapid spread of AIDS in the 1980's. Today, approximately 25 billion gloves and 8 billion condoms are used. With the increasing use of gloves, allergic reactions also increased, which led to an increase in user sensitivity.

However, a differentiation must be made as the term "allergy" is not synonymous with hand excema. In general, a distinction is made between allergic and pseudo-allergic reactions.

Allergic reactions

Over-sensitive reactions can be divided into 4 types as per Coomb and Gell, but only types I and IV are relevant for glove allergies.

Type I allergies:

These types of allergies are caused by special human antibodies, the immunity globulines E



(IgE) and histamine. Instant allergies show up from 10 to 30 minutes after allergen contact in the form of immunological contact urticaria on finger joints, thumbs and wrists. Severe anaphylactic reactions may also occur. This can lead to life-threatening situations. Type I allergies are caused by the proteins contained in latex. At present, intensive research is being carried out world wide to ascertain which of the many proteins cause allergies.

Powder, which is also used in production in order to assist donning and to aid sweat absorption of the gloves, was considered to be the culprit for releasing type I allergies. The results published in this regard have, however, remained controversial.

Corn starch powder removed from the glove showed contaminations with allergens of NRL(Natural Rubber Latex) which cannot be found in the powder itself. It is therefore assumed that powder is the transport medium for latex proteins. The dust-like powder is released into the environment when gloves are donned or taken off. This contamination of air in hospitals could explain why highly sensitive people develop symptoms, such as, a running nose and breathing problems, even if they had no direct contact with latex materials

Type IV allergies:

In this case the first symptoms appear approx. 6–8 hours after contact with an allergen, which can increase up to 4 days after removal of the allergen. The type IV allergy is transmitted via T-lymphocytes. It appears as allergic contact excema with papules, blisters,



Allergic type IV contact excema (Releasing agent: Thiurames)

discharge and itching in typical localisation.

The main cause are additives used in the modern manufacturing processes for medical gloves, such as accelerators and antioxidants.

These additives are used to optimise the product but are also the the most frequent cause of latex glove allergies. Thiurames, one of the accelerators being used in the past by several

glove manufacturers, was the main cause for between 50 to 80% of all allergic contact excema cases.

Pseudo-allergic reactions

Pseudo allergic reactions against latex gloves – with negative allergic findings – can imitate the clinical picture of an allergic type IV contact excema or a type I contact urticaria. Pre-disposing factors in particular have an adverse effect on the physiological skin protection barriers, through frequent work in damp conditions and the use of skin-damaging substances.

30–60% of all people who are allergic to gloves show skin damage relating to an atopic excema (Neuro dermititis), or an allergic contact excema prior to first exposure. In

general, when using latex gloves regularly, latex glove allergies can occur at intervals of between one month and up to 15 years after the first contact.

Suggested Solutions

The following factors contribute to the development of pseudo allergic reactions and skin irritations:



Konjunktivitis (Contact urticaria Syndrome stage III)

- Intensive scrubbing of the hands and the use of disinfectants
- Insufficient drying of hands after cleansing
- Tendency of developing allergic illnesses
- Swelling up of skin through:
 - Excessive sweating of hands
 - Insufficient drying of hands
 - Occlusion effect caused by gloves
- Mechanical effects caused by powder

Avoid or reduce any/all of the above. Furthermore, intensive care of the skin with appropriate skin-care products is advisable.

For allergic reactions, avoidance of the allergen is the most effective alternative.

However as this is almost impossible, the use of latex gloves with a low allergen content for all activities is recommended. This will also lead to better protection for patients.

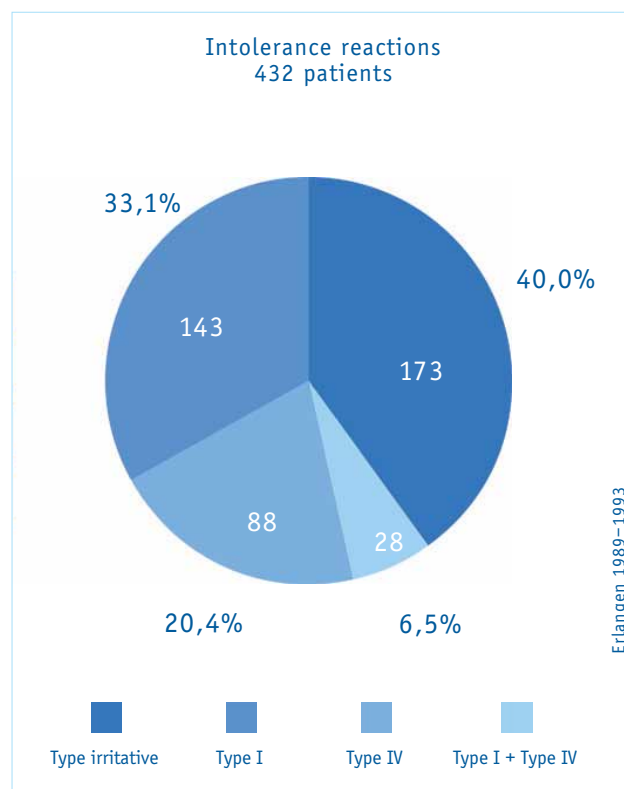
The following measures reduce the allergen content of latex gloves during the production process:

- Avoidance of those chemicals during the production process which are most commonly known to cause an allergy, e.g. thiurames
- Repeated leaching (washing) of gloves to reduce all water soluble proteins and chemicals
- Chlorination: The resultant neutralisation and washing process will also reduce the protein content of the latex product

Another alternative for avoiding allergic reactions is offered by “non latex gloves”. These gloves are made from synthetic rubber however, synthetic gloves do not have the characteristics of a natural latex glove, such as excellent elasticity, which ensures a comfortable fit. With the natural latex glove, the product life cycle – from

rubber tree to waste disposal – is absolutely safe and environmentally friendly.

This is not the case for gloves made from synthetic material. The materials used in production called monomers, are often toxic and waste disposal of such gloves can be a problem, as the synthetic material is not biodegradable, and incineration can lead to the build-up of toxic gases.



Production of “non latex gloves” can increase the risks for the individual and the environment. As synthetic gloves are a relatively new product, experience is relatively limited in comparison with natural latex gloves. Initial reports on allergic reactions to the raw materials of PVC, neoprene and others can already be found. Experts and specialists are researching the development of skin friendly glove from natural latex as the ultimate goal.

As the largest European manufacturer of gloves from natural latex, SEMPERMED is continuously working to optimise it’s products. With more than 80 years of clinical experience, SEMPERMED do not use the accelerator Thiurame, which is the releasing agent for 80% of type IV allergies. Gloves with an extremely low allergen proportion, have for a long time been part of the vast product range. SEMPERMED SUPREME powder-free,

has a particularly low allergy content. This glove has a unique Multilayer Coating (MC). The special synthetic inner coating offers a very high level of skin tolerability, excellent ease of application and sweat absorption. Already washed several times, the SEMPERMED SUPREME powder-free with MC is also low in protein and irritants. The most modern production procedures and most stringent testing methods ensure highest product quality and a “non irritated” working environment within the medical field.

Literature

1. BBC TV & Radio: Medicine Now; Internet; 06.12.1994
2. ABERER W.: Hautprobleme und Operationshandschuhe; I. Universitäts-Hautklinik, Vienna
3. HEESE A.: Dermatologische Klinik Erlangen; Deutsches Ärzteblatt/ Ärztliche Mitteilungen; 86. Jg., Heft 46/16.11.1989
4. HEESE A., HINTZENSTERN J., HORNSTEIN O.P., KOCH H.U., PETERS K.-P.: Allergic and irritant reactions to rubber gloves in medical health services; 1991
5. TURJANMAA K.: Incidence of immediate allergy to latex glove in hospital personnel; Contact Dermatitis; No.17/1987; S. 270-275
6. INTERNATIONAL CONFERENCE „LA MAISON DE LA CHIMIE“: Latex Allergy – the latest position; 11.01.1995:
 - BARCLAY L.M.: Developments in low protein prevulcanized latex materials
 - BAUR X.: Characterization and inactivation of a major latex allergen
 - BEEZHOLD D.: Identification of latex protein allergens
 - ELLIS K.: Typ I allergy to latex products - incidence, management and future prospects
 - KNUDSEN B.B.: Biological hazards – regulatory options
 - LEVY D.: Measurement of hypersensitivity to latex protein
 - MORRIS M.: A comparison of natural rubber with synthetic alternatives
 - PALOSUO T.: Purification and molecular characterization of latex allergens
 - TURJANMAA K.: Occupational aspects and occurrence of natural rubber latex allergens
 - YIP E.: Residual extractable proteins and allergenicity of natural rubber products

Print Information

Media Owner and Producer: Semperit Technische Produkte Ges.m.b.H. & Co KG, Publisher: Sempermed, Modecenterstrasse 22, A-1031 Vienna, Tel. +43-1-79 777-621, Fax: +43-1-79 777-630, E-Mail: sempermed@semperit.at, Editor: Martina Büchele