

## MANAGEMENT OF PATIENTS WITH LATEX ALLERGY: LATEX-FREE PROTOCOLS

RITA AZZOLINA, GIUSEPPA LA CAMERA\*, AGOSTINO MESSINA\*\*, DESIRÉE VIVIANA NAVARRIA, FEDERICA CHIARENZA, MARCO CAVALERI, LIVIO SALVATORE FIORINO, MARIA CELESTRI, ALESSIA DI FRANCESCO, GIOVANNI LUCA DI BARTOLO\*\*\*  
University of Catania - Department of Surgery: Anesthesia and Intensive Care Unit, Policlinico Hospital, G. Rodolico Catania  
(Chair of research: Prof. Rita Azzolina) - \*Azienda Ospedaliera Universitaria Policlinico "Gaspere Rodolico", Catania,  
Dipartimento: Specialità Medico-Chirurgiche - \*\*Clinica Otorinolaringoiatrica Azienda Ospedaliera Universitaria "G  
Rodolico" Catania - \*\*\* Ospedale "Umberto I" Siracusa

---

*[Gestione del paziente con allergia al lattice: protocolli]*

### SUMMARY

The authors aim to highlight some latex-free protocols to be adopted in the management of patients with latex allergy. They analyze the prominence of anesthesia evaluation of these patients focusing on preoperative prophylaxis and highlighting how construction of an operating room and medical devices to be taken to reduce the risks associated with such an allergy. They give the attention to emergency situation or when allergy is suspected, and conclude, even according to personal data, saying that sure the prevention and/or the construction of latex-free operating room with simple rules to be adopted, allow to operate in complete safety.

**Key words:** IgE mediation reaction, sensitization, clinical signs, prophylaxis, latex free operating room

### RIASSUNTO

*Gli Autori si propongono di mettere in evidenza alcuni protocolli latex-free da adottare nella gestione del paziente con allergia al lattice. Analizzano l'importanza della valutazione anestesiológica di tali pazienti soffermandosi sulla profilassi pre-operatoria e mettendo in evidenza le modalità di allestimento di una sala operatoria nonché i presidi da adottare al fine di ridurre i rischi connessi a tale allergia. Prestano anche l'attenzione alle situazioni da affrontare in urgenza o in caso di allergia sospetta e concludono, anche secondo dati personali, affermando che sicuramente la prevenzione e/o l'allestimento di una sala latex-free con semplici regole da adottare porta ad operare in regime di completa sicurezza.*

**Parole chiave:** Reazione IgE mediata, sensibilizzazione, manifestazioni cliniche, profilassi, sala operatoria latex-free

---

### Introduction

The latex allergy is an IgE-mediated reaction that occurs in patients sensitized to exposure to a protein contained in the latex, a milky liquid that flows into the trunk of a tree called *Hevea brasiliensis*, from which we obtain just the natural rubber. The latex contains 33% of rubber and 1.8% of protein. During the manufacturing process, various chemical additive are added to latex: proteins are responsible of allergic conditions mediated by IgE antibodies, while the additives can cause delayed sensibility and eczematous dermatitis.

The latex is present in many products that are used in health care (surgical gloves, catheters, bladder, Ambu bag, anesthesia masks, endotracheal tubes, catheters for barium clysters, catheters for intravenous use, patch, barriers interdental, dental appliances elastic, orthodontic appliances, rubber,

etc.), but is also present in commonly used products (condoms and diaphragms, pacifiers, balloons, toys, fins, diving masks and accessories for sailing, balls and sports balls, clothing such as elastic bandages, rubber shoes, gloves for household, shower curtains, hot water bags, air mattresses, bracing for carpets, insulation for doors and windows, erasers, stamps, rubber bands, compound tires ...).

### Prevention

Primary prevention aims to eliminate all latex products. This is currently impossible because the latex, for the known characteristics of elasticity, it is widely used both in healthcare and in ordinary life. Moreover, the identification of products containing it and an awareness campaign, can turn the consumer and the healthcare professional to use with more awareness the devices involved.

The secondary prevention must eliminate the trigger of the allergic event against latex. In accordance with Legislative Decree 626/94, the health surveillance of workers is carried out with the check-ups before the start of exposure to specific risk and with regular visits.

A certainly feasible measure in short term and affordable, is the rationalization of the use of different types of gloves in relation to the tasks or procedures that must be performed, avoiding the undue use of latex gloves for activities that do not require fine manual ability. PVC (polyvinyl chloride) may be reserved for practices or ancillary tasks that do not require protection for high risk of exposure to biological agents.

The use of non-latex gloves such as nitrile (for exploration) and neoprene surgical gloves (both guaranteed by the CE mark) would be set but the high cost sets limits.

## Diagnosis

The diagnosis of allergic disease from latex is based on:

### a) *Clinical history*

It is a balanced emphasis on accurate medical history, with the collection of all data concerning the intensity and duration of work and outside work, the nature of clinical manifestations, the relationship between exposure to latex and previous and current symptoms and the presence or less than predisposing factors. Remember that patients with a history of allergies or atopic, particularly bronchial asthma or allergic to foods such as avocado, banana, chestnut, kiwi fruit, nuts, peanuts, pineapple, peach, papaya, tomatoes may likewise submit to a latex allergycross-reactivity between latex and other food allergens present in these materials but also between latex and an ornamental plant widely circulated, the *Ficus benjamina*.

It's very important to note that many allergic reactions linked to latex, which occurred during surgery or diagnostic relief, can be mistaken for allergies or intolerances to medications.

### b) *Laboratory test*

In high-risk individuals (pediatric patients with myelomeningocele or malformations of the urogenital tract) and with a history of severe systemic reac-

tions (angioedema, severe asthma attacks, shock) to latex is imperative to use as a first approach the research with in vitro tests of IgE specific although these are less sensitive than skin testing.

### c) *Skin test*

skin test are performed with extemporaneous extracts obtained from latex gloves by the technique of skin prick test with all different types of commercial extract of latex known. If these prove to be all negative, we move to that prick BY prick with a needle puncture of the glove shown by the patient as more harmful and then skin the same impregnated with latex.

In the event that all these tests turn out to be negative, but the patient's medical history is positive for contact urticaria, must use the "Use test", that is the direct application after of a little part and then the whole glove held responsible of allergy.

There is also a final test used in cases where the patient develops symptoms mainly bronchial, called "Bronchial provocation test" by direct inhalation of extracts of latex gloves or by spraying in the exposure chamber.

### d) *Anesthesiological assessment*

Shall be considered allergic to latex, only patients with positive RAST and the diagnostic test is required in all the categories at risk.

### e) *Preoperative prophylaxis*

- 24 h before surgery: Methylprednisolone 1 mg / kg im Two doses.
- the day of surgery: H1-antagonist, 1 h before (eg Prometazina 20-50 mg IM), H2-antagonist 1 h before (eg, ranitidine 50 mg in 50 cc of saline solution administered slowly iv)methylprednisolone 1 mg / kg im

## Preparation of latex-free operating room

In general the reaction to latex will act within 20/60 minutes from induction, where a sufficient amount of antigen enters the bloodstream; development in the operating room can be much more rapid (2-3 minutes), although the extent of reaction is not related to latency.

The preparation of a latex-free room provides to adopt a few simple rules that once assimilated

and understood clearly, leads to operate in a system of complete safety.

Even if the surgery is programmable, the day before the intervention itself will remove all rubber material from the operating room (gloves, zinc-oxide patch, tourniquets, anesthesia masks, ambu, para drainage, bottles of Emagel), wearing exhaustively latex-free gloves.

The sutures can be left all. We will proceed to clean the room, and trolleys and cabinets even inside. We will have all latex-free material inside the room need for surgery, and we will check that the material used is included for company and for code on the list of latex-free devices. Hanging in the room the protocol and list of equipment that you absolutely should not be used.

We hang on the door of the room a sign saying that you are performing a surgery under latex-free. Close any windows that connect the hall and other rooms, such as the autoclave room, and proceed to the sterilization of all drapes including staff uniforms present for surgery. It should be forbidden entry into the room to staff not directly involved.

On the day of surgery dusted with wet technical all surfaces of the room, to remove particles deposited during the night. The latex-free surgery should be performed first, and the patient is prepared directly in the room, with doors and windows closed. We will first introduce a cannula venflon, secured with paper patch.

For the drip infusion, if not available without latex, the rubber is covered with the patch of paper, and it will not be used as a second away. Any operation will be performed next with a doctor present. Among the anesthetic drugs necessary, remember to keep within reach of cortisone. When in doubt, do not use material not in the list of latex-free, however if irreplaceable alert the anesthesiologist and surgeon.

The reawakening is due in the room and only when the patient is self-sufficient should be put to bed, without the aid of patient transfer (if not latex-free).

### **In emergency**

As regards what to do in case of allergic patients in emergency, it is not possible to clean the room before surgery, however, choose the most clean and to avoid the possibility of accidental use, remove from the room the following devices: boxes with sterile gloves and latex, cotton drapes, fabric

patches, tourniquets, no latex-free disposable syringes, and other ambu containing latex balloons used for anesthesia, rubber masks.

Replace with latex-free gloves the laryngoscope blades, syringe tube cuff, the anesthesia circuit, the filter and the corrugated hose if already open. Bring into the room the ambu, silicone mask, sterile gloves not latex-free, silastic tube as a tourniquet, silicone foley catheter bladder.

Remove the bottles of Emagel may be present in the room (the insertion of the tubing is latex) with eufusin bottles, and prepare the cuff pressure bloodless wrap the air passage ducts with patch of paper.

Remind also that the following devices in common use in many operating rooms do not contain latex: electrosurgical plate, electrodes for the monitor, suction catheters.

Drager anesthesia apparatus, do not contain natural rubber, as well as vacuum cleaners and their cartridges, appliances for Storz laparoscopy, electrosurgical units, beds operators OPT (for other models of the surgical bed, cover the floor with a double cloth previously sterilized and ensure that there is no point in contact with the patient's skin).

It may be appropriate to store the latex-free material in a room separate from the operating rooms (this avoids contact with airborne particles) and all together.

This greatly facilitates the exchange of devices in an emergency, and the staff in case of difficulty can be immediately to hand everything you need for intervention, without wasting time.

### **Conclusions**

We wanted to highlight the primary importance of a careful and meticulous search of the risk associated with this type of allergy, sometimes even unrecognized by the patient himself.

Therefore is necessary to conduct an accurate history in preoperative area to detect the possibility that previous allergies, atopy or cross-reactivity to certain food allergens may subtend the presence of latex allergy.

The importance of attention in the preoperative phase is grounded in the possibility that we have today, to perform efficient prophylaxis, but above all to prepare a latex-free operating room that allows us to operate in safe conditions in the presence of risk or certain allergies.

## References

- 1) Bircher AJ, Langauer S, Levy F, Walh R: *The allergen of Ficus Benjamina in house dust*. Clin Exp Allergy 1994; 25: 228-233.
- 2) Food and drug administration: *Allergic reactions to latex-containing medical devices*. Rockville, USA: MDA 1991; 91-101.
- 3) Gary L, Gordon S: *Latex sensitization: occupational versus general population prevalence rates*. Am J Ind Med 1999; 196-202.
- 4) Moneret- Vautrin DA, Mata E, Guent JL et al: *High risk of anaphylactic shock during surgery for spina bifida*. Lancet 1990; 335: 865-866.
- 5) Reines HD, Seifert PC: *Patient safety: latex allergy*. Surg Clin North Am. 2005 Dec; 85(6): 1329-40. Department of Surgery, Inova Fairfax Hospital, USA.
- 6) Sanchez Palacios A.: *Latex allergy. Diagnosis and therapeutic aspects*. Unidad de Alergología, Hospital Universitario Insular, Las Palmas de Gran Canaria, Spain. Allergol Immunopathol (Madr). 2001 Sep-Oct; 29(5): 212-21.
- 7) Slater JE: *Latex Allergy*. Ann Allergy 1993; 70: 1-2
- 8) Sussman GL, Beezhold DH: *Allergy to latex rubber*. Guthrie Foundation for Medical Research, Sayre, Pennsylvania. Ann Intern Med. 1995 Jan 1; 122(1): 43-6.
- 9) Turjanmaa K: *Incidence of immediate allergy latex gloves in hospital personnel*. Contact Dermatitis 1987; 270-275.

---

*Request reprints from:*  
Dott.ssa FEDERICA CHIARENZA  
Via G. Marconi, 4  
95022 Acicatena (CT)  
(Italy)