

alteplase (rt-PA) in 60 patients with acute myocardial infarction and TIMI grade 0 infarct-related artery before the start of thrombolytic treatment. Lp(a) concentrations were assessed with the 'TintElize' Lp(a) enzyme immunoassay (Biopool, Umeå, Sweden). The median pretreatment Lp(a) concentration was 16.6 mg/dl (range 1–112.8) in patients in whom recanalisation occurred (TIMI grade 2 or 3) at 90 minutes after initiation of thrombolytic therapy and was 15.5 mg/dl (range 0–142.2) in patients in whom it did not. The proportions of patients with pretreatment Lp(a) values of 20 mg/dl or more were 45% and 42% in the groups with and without recanalised infarct-related artery, respectively. Logistic regression analysis showed that Lp(a) was not significantly related to reperfusion.

Institute of Coração (INCOR),
University of Sao Paulo,
Sao Paulo, Brazil

BERNARDINO TRANCHESI
RAUL MARANHÃO

Department of Clinical Chemistry and Centre
for Thrombosis and Vascular Research,
University of Leuven, Belgium

CHRISTA COBBAERT
PHILIPPE VANHOVE
MARC VERSTRAETE

Allergens in latex surgical gloves and glove powder

SIR,—Surgical gloves made from natural rubber (latex) are increasingly reported to cause cutaneous and systemic hypersensitivity reactions. In our hospital the frequency of latex allergy examined by prick testing was 6% among doctors and nurses in the surgical unit.¹ People sensitised by cleaning gloves or other products made from latex are also at risk of allergic reactions during operations, delivery, and vaginal or rectal examinations.^{2–5} The elution of latex proteins from surgical and examination gloves into the skin or mucous membranes of sensitised subjects seems to be the main cause of symptoms such as local and generalised urticaria, rhinitis, asthma, and even anaphylaxis. Latex allergens can also be inhaled, and Dr Baur and Dr Jäger (Apr 14, p 912) and Dr Lagier and colleagues (Aug 25, p 516) suggest that latex allergens are transferred to glove powder, which becomes airborne. Dr Seaton (Sept 29, p 808), however, points out that there are no reports confirming the presence of latex allergens in glove powder.

The natural rubber latex from which surgical gloves are made is principally polyisoprene, but it also contains about 2% proteins.⁶ Various chemicals are added during manufacture, the gloves are cured with heat, and corn-starch powder is sprayed onto them.⁶ We have shown that in contrast to eluates from latex gloves, pure corn-starch glove powder obtained from glove manufacturers did not cause positive prick tests in subjects allergic to latex.⁷ We have used the immunoblot techniques to characterise latex allergens in gloves and have investigated whether glove powder is contaminated with latex proteins. The IgE antibodies used were from a latex-allergic subject who had had an asthmatic reaction to glove contact during delivery. We identified the same allergens in

ammoniated natural latex and eluates from surgical latex gloves, confirming that the allergenic proteins persist in the gloves during manufacture. Glove powder obtained by gentle rubbing was also contaminated with the same latex proteins (figure). A major allergen seemed to consist of two polypeptides with molecular weights of about 10 kD. The more noticeable separation of the two bands in glove powder could result from its high carbohydrate content. An allergen of similar molecular weight has also been detected by immunoblotting in natural latex⁸ but, as far as we are aware, not in glove extracts or glove powder.

Since glove powder can be contaminated with latex allergens their airborne dissemination should be seriously considered. We have now examined 94 latex allergic subjects, 45% of whom were medical personnel, but we have not detected symptoms other than mild rhinitis and conjunctivitis that could be accounted for by the airborne glove powder. However, direct contact with medical equipment made from latex is the main cause of severe hypersensitivity reactions. To avoid hazards during medical and surgical procedures, it is of the utmost importance to identify latex-allergic subjects beforehand. Such adults are generally atopic, tend to be women, and have a history of skin irritation when wearing gloves,⁵ whereas children often have a history of facial swelling when blowing balloons.^{3,4} Prick testing is the best way to confirm an allergy; latex radioallergosorbent testing is positive in only about 65% of the allergic subjects (Turjanmaa K, thesis, 1988).

We agree that if a patient is allergic to latex, non-latex gloves should be worn by all the medical staff to avoid airborne exposure from latex-contaminated glove powder. If, however, a staff member is allergic to latex but has no history of respiratory symptoms this measure seems to be unwarranted. In our series the 12 latex-allergic doctors have used non-latex gloves without difficulty despite their colleagues wearing surgical latex gloves. Since allergenicity of latex gloves from various manufacturers varies⁷ glove powder might be contaminated by different amounts of latex allergens.

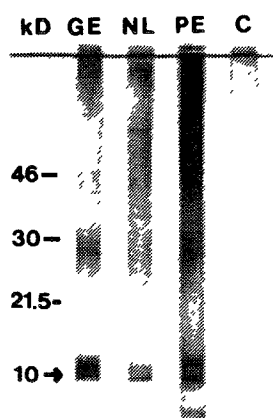
Departments of Dermatology
and Clinical Sciences,
University of Tampere
and University Hospital,
SF-33520 Tampere, Finland

KRISTIINA TURJANMAA
TIMO REUNALA

HARRI ALENIUS

National Public Health Institute,
Helsinki

HENRIKKI BRUMMER-KORVENKONTIO
TIMO PALOSUO



Immunoblot analysis of IgE antibody binding to latex extracts.

GE, extracts obtained from surgical gloves, NL, ammoniated natural latex, and PE, glove powder. No IgE binding is seen to glove extract from serum pool (n = 5) of non-latex-allergic subjects (C).

1. Turjanmaa K. Incidence of immediate allergy to latex gloves in hospital personnel. *Contact Dermatitis* 1987; **17**: 270–75.
2. Turjanmaa K, Reunala T, Tuimala R, Karkkainen T. Allergy to latex gloves: unusual complication during delivery. *Br Med J* 1988; **297**: 1029.
3. Slater JE. Rubber anaphylaxis. *N Engl J Med* 1989; **320**: 1126–30.
4. Taylor JS, Cassettari J, Wagner W, Helm T. Contact urticaria and anaphylaxis to latex. *J Am Acad Dermatol* 1989; **21**: 874–77.
5. Pecquet C, Leynadier F, Dry J. Contact urticaria and anaphylaxis to natural latex. *J Am Acad Dermatol* 1990; **22**: 631–33.
6. Tarlo SM, Wong L, Roos J, Booth N. Occupational asthma caused by latex in a surgical glove manufacturing plant. *J Allergy Clin Immunol* 1990; **85**: 626–31.
7. Turjanmaa K, Laurila K, Makinen-Kiljunen S, Reunala T. Rubber contact urticaria: allergenic properties of 19 brands of latex gloves. *Contact Dermatitis* 1988; **19**: 362–67.
8. Morales C, Basomba A, Carreira J, Sastre A. Anaphylaxis produced by rubber glove contact: case reports and immunological identification of the antigens involved. *Clin Exp Allergy* 1989; **19**: 425–30.

Gowers' shorthand

SIR,—William Gowers (1845–1915) was a careful recorder of symptoms, combining the “art of perfect observation and perfect precise description, written in easy simple prose”.¹ He is remembered eponymously for a myopathy, a solution, a tract, a sign, a phenomenon, and a manoeuvre,² to which can be added a test and a ward at London's National Hospital. He was also a skilled amateur artist, who exhibited at the Royal Academy. Another of his many interests was shorthand, a phonetic system of rapid writing invented by Sir Isaac Pitman in 1837. Gowers was introduced to this method in his late teens, when apprenticed to a doctor in Essex,³ and claimed that proficiency could be gained in a month with two hours' daily practice. He, like Bernard Shaw, remained a champion of the technique throughout his life,⁴ and published many brief articles on clinical matters in shorthand, few of which have been transcribed.²