

toms such as rhinitis, conjunctivitis, and sneezing; 9% reported sensitivity to banana and 3% to avocado. Only one of the nurses, positive to the skin prick test, showed a high titer of specific IgE to latex (class 2; 1.19 kU/l). None had high IgE titers for banana.

■ The present study revealed only one subject with immediate latex allergy among 33 nurses, as confirmed by a positive history and skin prick test. This corresponded to a prevalence of 3%. A previous study from Finland (2) found an overall prevalence of latex allergy of 3% among hospital personnel. In that study, 2.2% of nurses in operating units were allergic to latex. However, symptoms related to latex glove use are reported more frequently than could be verified as an allergy by immunologic tests. In our study, as many as 36% of subjects had latex-related symptoms. Similar results were found among personnel working in an emergency department (3). According to the experience of the nurses in our study, symptoms of allergy declined after the introduction of latex gloves with less powder. Is the high incidence of symptoms of importance in the future development of IgE-mediated latex allergy?

In conclusion, the present study clearly shows that latex-related symptoms are common, and that latex allergy occurs in 3% of nurses with high occupational exposure. A correct diagnosis is important for occupational and allergologic reasons.

Key words: epidemiology; latex allergy; occupation.

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Latex/chlorhexidine-induced anaphylaxis in pregnancy

A 26-YEAR-OLD atopic woman, para 1+0, developed anaphylactic shock in hospital at 39+3 weeks gestation shortly after a vaginal examination

performed by a midwife wearing latex examination gloves and using Hibitane Obstetric® cream containing chlorhexidine 1% w/w. She responded well to standard treatment including intravenous adrenaline. Neither mother nor unborn child suffered any sequelae from this incident. Latex and chlorhexidine were considered as possible precipitants, and all further vaginal examinations were performed with vinyl gloves and lubricating jelly (K-Y®). At 39+5 weeks, a healthy infant was delivered by elective Caesarean section. The operators scrubbed with iodine and used Regent Sensor™ hypoallergenic gloves containing latex at a concentration of <2 µg/g (compared with 40 µg/g for standard nonhypoallergenic gloves).

Subsequent enquiries revealed that the patient had complained of an intense, local burning sensation during the admission vaginal examination. Her obstetric record noted that she had experienced similar symptoms after examinations during her previous pregnancy and that she was "possibly allergic to latex gloves or obstetric cream". No further investigation had been undertaken at that time. When specifically questioned, she reported no obvious symptoms during day-to-day contact with domestic sources of latex.

Mucosal exposure of highly sensitized patients to a combination of latex and chlorhexidine during vaginal examination can precipitate anaphylaxis.

Current investigations showed a raised total serum IgE of 700 IU/ml with a positive class 3 (protein reference units) specific IgE CAP result (Pharmacia Ltd) to latex allergen. In addition, positive specific IgE results were found to banana (class 2) and avocado (class 2).

In vivo latex sensitivity was demonstrated with a 1 cm² piece of latex glove, moistened with phosphate-buffered saline (PBS), applied to the forearm by a method similar to that recently described by De Swert et al. (1). This produced a 1.5 cm×1 cm wheal with surrounding flare reaction within 10 min of application. PBS alone produced no such contact urticarial reaction. Hibitane Obstetric® cream was diluted 1:10, 1000 with distilled water and used for skin prick testing with appropriate positive (histamine 1 mg/ml) and negative (PBS) controls. Within 3 min, the test site developed an 0.8-cm diameter, pruritic wheal with pseudopodia and surrounding erythema. After the results of these tests, she was advised to avoid contact with latex and chlorhexidine

products and to carry a warning card or alert bracelet/necklace.

■ Although relatively uncommon in pregnancy, anaphylaxis is a life-threatening condition which may have serious implications for both mother and child, and which hospital staff should be able to recognize and respond to appropriately and promptly.

The potential for anaphylaxis on vaginal contact with latex is well recognized and is demonstrated by reports of severe reactions following the use of latex condoms (2) or gloves (3). The most common mode of sensitization is through direct mucosal contact, and the greatest risk is present in atopics and those having undergone frequent invasive surgery.

Anaphylaxis due to topical application of chlorhexidine is also well documented, occasionally after skin contact but more frequently after mucous membrane application and most recently in relation to urinary catheterization (4) and intranasal usage (5). Caution in, and even a ban on, its routine application for antiseptics of mucous membranes has been suggested (6).

In this patient, anaphylaxis may have occurred as a result of mucosal exposure to a combination of latex and chlorhexidine allergens at the time of vaginal examination.

In cases such as this with well-defined and largely predictable exposure to relevant allergens, the cornerstone of treatment is allergen avoidance through suitable education of staff and patients, strict avoidance of allergen-containing substances, and use of conspicuous warning devices as well as prominently marked case records. Information sheets on latex-containing materials should be given to patients and should include advice about possible cross-reactions with foodstuffs. On detailed questioning, this patient did admit to lip swelling on ingestion of avocado and banana, and medical staff should be aware of the association between latex and food allergens, which may have importance not only in sensitization and triggering of reactions but also in requesting and interpretation of appropriate laboratory investigations. Health-care professionals should be aware of the ubiquitous nature of latex allergen throughout the hospital environment, and particularly where patients belong to high-risk groups or show evidence of even minor or subtle previous reactions. Advice about avoiding use of latex-containing materials in sensitive patients should be available to all staff and should indicate that latex is frequently present in masks, tubing, ventilator hoses, adhesive tape, catheters, and drains as well as gloves. Stoppers and bungs in vials of drugs or vaccines are frequently forgotten sources of latex allergen. Similarly, dental practi-

tioners, radiographers, physiotherapists, and perhaps even other professionals attending to personal needs, such as chiropodists, beauticians, and hairdressers, may usefully be educated or informed. Our patient suffered a local oral reaction soon after her discharge because she failed to inform her dentist that she may react to latex gloves. Absence of anaphylaxis in relation to this incident may suggest that the episode in hospital occurred because of extreme sensitivity to chlorhexidine or that exposure to both of the implicated allergens simultaneously was required to precipitate a severe systemic reaction. As with latex, chlorhexidine sensitivity may be manifested outside the hospital environment, as it is found in some skin-cleansing products, ointments, mouthwashes, and toothpastes.

General awareness and suitable precautions for potentially high-risk procedures with availability of adrenaline and other resuscitative measures are first-line management needs for the severe allergic emergencies which occur in such circumstances as outlined in this case. Exposure at mucosal surfaces in patients with combined latex and chlorhexidine sensitivity may be especially hazardous, and in such patients particular care and vigilance are required during operative procedures and routine vaginal examinations. Only in exceptional circumstances relating to these particular allergens will patients need to carry adrenaline. In high degrees of sensitization, however, this may become necessary, and such patients should become proficient in recognizing the danger signs of a severe event and in self-administration of adrenaline.

Latex sensitivity is being increasingly recognized and may be increasing in incidence. As chlorhexidine sensitivity is also becoming more apparent, perhaps the routine usage of these products, particularly in combination and at mucosal surfaces, should be reviewed, especially as there are now acceptable alternative nonlatex and chlorhexidine-free products available.

Key words: anaphylaxis; chlorhexidine; latex; pregnancy.

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Paracetamol sensitivity without aspirin intolerance

INTOLEANCE reactions to acetylsalicylic acid (ASA) manifested as rhinitis, asthma, or urticaria-angioedema are well known. However, allergy-like reactions to paracetamol (1) have been rarely reported in spite of widespread consumption of this analgesic. Selective sensitivity to paracetamol without ASA or nonsteroidal anti-inflammatory drug (NSAID) intolerance is even more uncommon (2-5).

In this paper, we report five cases, studied at our department, with paracetamol sensitivity confirmed in four of them by oral challenge. In all cases, we confirmed ASA tolerance by oral challenge.

Case 1: A 27-year-old woman experienced several episodes of facial angioedema or tongue edema and dyspnea 15 min after ingesting drugs containing paracetamol.

Case 2: A 48-year-old woman developed an itching erythematous plaque on her right mammary areola 60 min after ingestion of one tablet of Gelocatil® (paracetamol 650 mg).

Case 3: A 48-year-old woman developed generalized urticaria 60 min after ingestion of one tablet of Gelocatil (paracetamol 650 mg).

Case 4: A 27-year-old woman experienced two

episodes of generalized urticaria 10 min after ingestion of one tablet of Gelocatil (paracetamol 650 mg).

Case 5: A 24-year-old woman presented two episodes of generalized urticaria 30 min after ingestion of different medicaments containing paracetamol.

In Table 1, we report the results of skin prick test, leukocyte histamine release test with paracetamol, and oral challenges with paracetamol and ASA carried out in our patients. All of them gave written, informed consent to participation in the study.

In cases 1 and 5, we also performed oral challenge with indomethacin 50 mg (Inacid®) and codeine 30 mg (Codeisan®), respectively, with tolerance. In case 1, we did not perform oral challenge with paracetamol because of the severity of the symptoms.

Four patients with positive oral challenges with paracetamol tolerated ASA orally.

Paracetamol is a commonly used analgesic-antipyretic drug with weak anti-inflammatory action. Its underlying mechanism seems to be a weak inhibition of cyclooxygenase, thus

blocking prostaglandin synthesis. Should inhibition of cyclooxygenase be the underlying mechanism of our patients' symptoms, adverse reactions to ASA would be expected in all of them.

Although we suspected an immunologic basis of the paracetamol sensitivity, the skin prick test performed in two patients and the histamine release test in three patients were negative. In another case studied in our department a few years before, the skin prick test and specific IgE determination by RAST to paracetamol (2) were positive.

Reports of paracetamol sensitivity with ASA tolerance are uncommon (3-4), and the underlying mechanism is not known. Recently, three cases of children with paracetamol hypersensitivity were reported, and one of them was confirmed by patch

Table 1. Results of tests in patient group

	Case 1	Case 2	Case 3	Case 4	Case 5
Paracetamol skin prick test 100 mg/ml	Neg	ND	ND	ND	Neg
Paracetamol histamine release	ND	Neg	ND	Neg	Neg
Paracetamol oral challenge	ND	160 mg FE	60 mg Urticaria	650 mg Urticaria	80 mg Urticaria
ASA oral challenge 500 mg	Neg	Neg	Neg	Neg	Neg

ND: not done; Neg: negative; FE: fixed eruption.

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