

Inadvertent Eyelid Irritant Contact Dermatitis from Hypoallergenic Surgical Tape

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Hypoallergenic surgical tapes are generally considered hypoallergic in nature as their commercial trademarks suggest. However, we report a case of a patient, after receiving therapeutic laparoscopy, developing symptoms and signs suggestive of not allergic but irritant contact dermatitis in the recovery room after an uneventful general anesthetic course. Hypoallergenic Micropore™ Surgical Tape (3M™ Health Care) had been applied to each of the patient's eyelids for eye protection. The skin lesions had a strong relation to the use of cosmetic chemical peeling agents on the patient's periorbital region. (*Chang Gung Med J* 2006;29(4 Suppl):25-8)

Key words: chemical peeling, irritant contact dermatitis.

CASE REPORT

A 33-year-old female (52 kg) patient, American Society of Anesthesiologists physical status II, was scheduled for transcervical resectoscopic and laparoscopic lysis of pelvic adhesion. Her past medical history revealed neither allergy to food or medication, nor hereditary atopic disorders. Resting electrocardiogram showed sinus tachycardia and occasional ventricular premature complexes (VPCs). Otherwise, her medical examination, laboratory results and chest X-ray analysis were all within normal limits.

After pre-oxygenation, anesthesia was induced with intravenous 2% lidocaine 40 mg, fentanyl 100 µg, propofol 120 mg and atracurium 25 mg. The trachea was intubated smoothly and anesthesia was maintained with inhaled sevoflurane with an end-tidal concentration of 2.5% to 3%. For protection of the patient's eyes, a piece of hypoallergenic Micropore™ (3M™ Health Care) surgical tape was

applied to each eye diagonally from the bridge of the nose across the upper eyelid to the lateral canthus with minimal pressure by a certified nurse anesthetist. After 90 minutes of uneventful anesthetic course, the patient gradually recovered from anesthesia without use of a neuromuscular antagonistic agent. The surgical tape on the eyelids was removed gently and no physical insult to the underlying skin was noted. After extubation, the patient was transferred to the recovery room.

On arrival in the recovery room the patient had a pulse oxygen saturation of 99%, a heart rate of 104 beats/min and an arterial pressure of 134/81 mm Hg. Ten minutes later, she complained of a stinging and itching sensation over both periorbital regions. Upon evaluation, there were no symptoms or signs typical of cornea abrasion, such as foreign body sensation, conjunctivitis, photophobia or tearing. However, erythema, rash, mild swelling and blisters were present over the periorbital region, the area that was previously covered with the hypoallergenic sur-

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gical tape. No skin lesions were found on the patient's trunk, upper and lower extremities, or other sites besides the periorbital region on her face, although Micropore™ surgical tape was also applied to the dorsum of her right hand for fixation of the intravenous line and a conventional surgical bandage tape was applied to the maxillary region for endotracheal tube fixation. Upon further history taking, the patient recalled that she had undergone a chemical peeling procedure on her face at a dermatologic clinic six months previously and had also used alpha hydroxy acid (AHA) cosmetic peel formulations by herself at home. No untoward reaction to this agent was present before the surgical procedure. Intravenous diphenhydramine 30 mg was then injected under the consultant dermatologist's impression of irritant contact dermatitis. The patient refused to be photographed for the records. A detailed explanation was given to the patient regarding her skin problems and discontinuation of the use of AHA formulations with close observation was suggested. After one hour, she was transferred to a ward with no itching or progressive severity of her skin condition. The patient was discharged two days later without major dermatological sequelae. Most of her symptoms resolved after one week.

DISCUSSION

AHAs for chemical peeling have been used in a variety of cultures since the time of Cleopatra.⁽⁴⁻⁶⁾ They are nontoxic organic acids that occur in natural foods and are often commercially referred to as "fruit acids".⁽⁴⁾ The common structure of all AHAs is a terminal carboxyl group on the second, or alpha, carbon and a variable length of carbon chain.⁽⁶⁻⁸⁾ Preparations of AHAs are dispensed in various concentrations, acidities and vehicles.⁽⁶⁾ Most of the formulations used in dermatologic clinics remain significantly acidic with a pH of 1.5 to 2.75, whereas those for home use are adjusted to a pH similar to that of skin at 4.4 to 5.6.⁽⁶⁾ Different vehicles, such as emollient creams, lotions and alcohol-based preparations, are available for different skin characteristics or conditions.⁽⁸⁾

Current theories suggest that AHAs act on the epidermis by causing desquamation, plasticization and epidermolysis.^(5,7) There are many indications for AHA peels, the most common of which is facial

rejuvenation or an improvement in the outer appearance of the skin.⁽⁵⁾ Before the procedure, dermatologists first carefully assess the skin type, the amount of photo-damage and the cutaneous disorder that is being treated.⁽⁵⁾ Usually a 50% or 70% nonneutralized or partially neutralized AHA formulation is applied to the indicated area. When erythema appears, the peeling agent is removed and neutralized with cool water or sodium bicarbonate.⁽⁵⁾ Thereafter, the patients may regularly apply the peeling agents with a concentration under 20% topically at home to maintain the desired effect.^(5,6)

The skin of the eyelid is very delicate, primarily because of the thinner epidermis, and facilitates penetration of irritants or allergens.^(2,3) Chemical peeling performed at home should follow strict instructions suggested by dermatologists. However, many patients do not comply fully with medical instructions and fail to suppress the urge to apply the peeling agents to areas not indicated: most common post-peel complications are due to inappropriate application of peeling agents.⁽⁹⁾ In our case, the patient misused the cosmetic agents containing AHAs by applying them to her bilateral periorbital regions, thus rendering the skin susceptible to contact insults. According to the patient, she did not experience any skin problems during her previous D&C procedure when adhesive Micropore™ surgical tape was also used for eye protection. However, at that time the patient had not yet used AHA agents.

According to 3M Health Care, common taping problems include mechanical injury due to tension, stripping, maceration, folliculitis, non-allergic contact dermatitis and allergic dermatitis. Surprisingly, allergic reactions to specific types of tape are among the least common of all taping injuries to the skin.⁽¹⁰⁾ However, materials that contain adhesive substances are often applied to patients' skin, and these substances can result in wound and skin complications perioperatively and postoperatively.⁽¹¹⁾

For hypoallergenic Micropore™ surgical tape, the adhesive is composed of a polyacrylate derived from polymerization of acrylic acid with non-woven Rayon materials without latex inside. Contact dermatitis from other acrylic polymers, e.g. methyl methacrylate, has been reported.⁽¹²⁾ Hypoallergenic-designed surgical tape may decrease incidence of allergic reactions but non-allergic irritation reactions can still occur, especially when applied to susceptible

skin. Although our patient failed to comply with a skin patch test, which could provide information about specific allergens, it was obvious from the clinical features that her dermatitis was due to irritants contained in the surgical tape.

Surgical patients receiving general anesthesia are prone to ocular injuries as general anesthesia causes loss of pain perception, obtundation of protective corneal reflexes and decreased tear production. Most corneal abrasions in such patients are caused by lagophthalmos (failure of the eyelids to close fully), long surgical procedures and lateral positioning, resulting in corneal drying.^(1,13) Also, chemical solutions and secretions may drip into the eyes, and surgical drapes or equipment may brush against the eyes unnoticed.⁽¹⁴⁾ Regarding intraoperative eye protection, Siffring and Poulton have reported less complications by use of hypoallergenic surgical tape alone.⁽¹⁴⁾

Since chemical peeling with agents containing AHAs has gained popularity recently, we expect an increase in the number of surgical patients who have used these agents and present with contact dermatitis on the face induced by exposure to irritants or allergens in surgical tape, even if "hypoallergenic" products are used. The possibility of severe contact dermatitis resulting from application of surgical tape for routine perioperative eye protection could be minimized by taking a more detailed history of allergies or use of facial cosmetics.

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低過敏外科膠帶引起眼瞼刺激性的接觸性皮膚炎

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低過敏性外科膠帶因其名稱而被普遍認知為具低過敏性。我們報告一個接受治療性腹腔鏡手術的病例，全身麻醉結束後在恢復室期間，眼瞼部位發生了皮膚炎，由症狀判斷，可能非屬於過敏性而是刺激性的接觸性皮膚炎。低過敏性外科膠帶手術中曾覆貼於眼瞼保護眼球，其眼瞼皮膚發炎，正與該病患術前在眼睛周圍皮膚使用美容化學換膚製劑有強烈的相關。(長庚醫誌 2006;29(4 Suppl):25-8)

關鍵字：化學換膚，接觸性皮膚炎。

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