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# Short Communications

## Salt dermatitis in the aquarium industry

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*Key words:* salabrasion; occupational; aquarium; seawater; salt; prevention; irritant contact dermatitis. © Munksgaard, 1996.

The seawater used in marine aquaria may be either natural or made up from synthetic sea salts mixed with freshwater, the difference not being biologically significant (1). Dried crusts of sea salt (whether natural or synthetic) are common and form along the edges of fish tanks and their lids, from splashing and evaporation (Fig. 1). If not removed, accidental contact is common. When reaching into an aquarium, the cubital fossa most often rubs against the crusts along the aquarium edges, and is thus irritated by friction and abrasion from the also intrinsically irritant salt grains and crusts (Fig. 2): in its most extreme form, salabrasion (2, 3).

### Case Reports

*Case no. 1*

A healthy 34-year-old aquarium shop manager developed pruritic eczema in his right cubital fossa 1 day after cleaning his fish tanks. There had been dried crusts of sea salt on the edges of his tanks, as none of them were covered by lids. He treated the lesions with 1% hydrocortisone cream and they cleared after 2 days. Only natural seawater was used in his tanks.

*Case no. 2*

A healthy 42-year-old aquarium shop manager noticed that a dry, pruritic, erythematous patch had developed in her right cubital fossa. The day before, she had been cleaning a number of fish tanks and changing their water. Dried sea-salt crusts had been present on the tanks' edges. No treatment was sought or initiated, and the patch resolved of its own accord 2 days later. Both natural and artificial seawater were used in her tanks.

*Case no. 3*

A healthy 26-year-old marine aquarium shop assistant was busy transferring a new shipment of fishes to the shop's fish tanks. As he was doing so, a dried crust of synthetic sea salt, which had been on the edge of one of the tanks, broke off and lodged inside his sock against the dorsum of his right ankle. Due to his preoccupation with the new shipment, the salt remained there for several hours before removal. The next day, several small, pruritic, eczematous lesions had arisen at the site of contact. These resolved 3 to 4 days later without treatment.

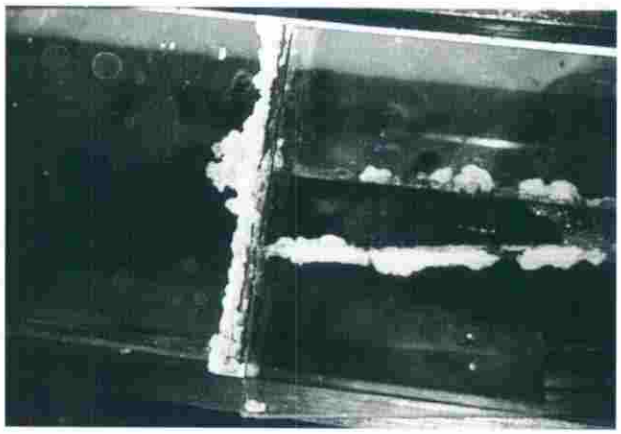


*Fig. 1.* Dried crusts of sea salt along the edges of a fish tank (view from above).



*Fig. 2.* An aquarium shop worker rubbing her cubital fossa against a fish tank's edges while reaching in.

### Discussion

Irritant contact dermatitis due to dried sea salt crusts arises from a combination of friction, mechanical trauma, abrasion, and the hypertonicity and desiccant properties of the salt. The lesions are non-specific in appearance and most commonly occur in the cubital fossa of the dominant arm. Prevention in the context of this industry is based upon the principles of containment (tight fitting lids), good workplace hygiene, and the use of rubber or PVC gloves of sufficient length.

### References

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2. Hicks J H. Swimming and the skin. *Cutis* 1977: *19:* 448–450.
3. Neely J L, Kovach R F. Traumatic tattoos treated by salabrasion. *W V Med J* 1986: *82:* 5–6.

## What risk of piroxicam photodermatitis in thimerosal-positive patients?

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*Key words:* piroxicam; thimerosal; thiosalicylic acid; mercurials; patch testing technique; cross-sensitivity; photosensitivity; drug reactions. © Munksgaard, 1996.

Photodermatitis from systemic or topical piroxicam has been known for 10 years (1). Histologic findings, positive photopatch tests, and in vivo investigation (2) support photoallergy. However, the suddenness of lesions after starting therapy, skin manifestations rarely being vesicular, and experimental study (3) are not so supportive. In patients with piroxicam photosensitivity, frequent patch test reactions to thimerosal have been found, mainly in those sensitized to the thiosalicylate component (4). It has therefore been proposed that skin lesions are due to a photoproduct of piroxicam, chemically similar to thiosalicylic acid (5).

### Patients and Methods

63 patients, 45 female and 18 male, aged from 5 to 65 years (mean 33.2 years) were tested with the allergens in Table 1. All had shown an erythematoedematous, and sometimes vesicular, patch test reaction to thimerosal 0.1% pet. 2 different %s of thimerosal were applied to help exclude irritant reactions (6, 7). Patch and photopatch tests were performed on the upper back with Van der Bend square chambers (FIRMA-Diagent, Firenze), removed 2 days after application, and evaluated at 2 and 3 days according to the ICDRG criteria. Prick and photoprick tests with oxicams (SIGMA Aldrich, Milano) were carried out on the flexor forearms and evaluated 20 min, 1 and 2 days later. Photopatch and photoprick tests were irradiated with UVA (5 J/cm$^2$) 2 days and 20 min after allergen application, respectively.

*Table 1.* Allergens used for skin tests

| Skin tests | Allergens |
|---|---|
| patch test | thimerosal 0.1%<br>thimerosal 0.05%<br>thiosalicylic acid 0.1%*<br>ammoniated mercury 1%<br>merbromin 0.1%**<br>mercuric chloride 0.05%**<br>phenylmercuric acetate 0.01%**<br>phenylmercuric nitrate 0.01%**<br>piroxicam 10%<br>tenoxicam 10% |
| photopatch test | thiosalicylic acid 0.1%*<br>piroxicam 10%<br>tenoxicam 10% |
| prick and photoprick test | piroxicam 2%†<br>tenoxicam 2%† |

* In ethanol: ** in water; † in ethanol; others in pet.

### Results and Comment

The results of patch tests are shown in Table 2. Sensitivity to piroxicam is uncommon in subjects positive to

*Table 2.* Patch test reactions in 63 thimerosal 0.1% pet. positive subjects

| | Thimerosal 0.05% pet. positives ($N$=38) | Thimerosal 0.05% pet. negatives ($N$=25) |
|---|---|---|
| piroxicam | 3 | – |
| thiosalicylic acid | 7 | – |
| mercurials | 9* | 3** |
| tenoxicam | – | – |

* Mercuric chloride (4), ammoniated mercury (4), merbromin (1), phenylmercuric nitrate (1).
** Mercuric chloride (3), ammoniated mercury (3), merbromin (2), phenylmercuric acetate (1).

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