

BioPharma Briefs



Biopharmaceutical Skin Diseases: A View from the Clinics

The most common occupational diseases involve the skin. Contact dermatitis is the most common skin problem associated with work exposures.

Irritant contact dermatitis affects most workers given enough exposure. Common examples are substances with high or low pH, or solvents with de-fatting properties to the skin. If intervention occurs soon enough and protective barriers such as gloves are used, the problem may be resolved. Prolonged, unprotected exposures may result in chronic hand dermatitis.

Allergic contact dermatitis (ACD) can appear clinically similar to the irritant type, but has several distinguishing features:

- Very small quantities of the allergen can stimulate a reaction; often, invisible amounts can be picked up from contaminated surfaces, making the exposure source difficult to determine.
- It is less common but has greater impact than the irritant type because often the only effective management is complete removal from exposure.
- The onset is delayed, usually 48 hours after contact, but may range from 24-72 hours.
- The worker will be able to handle an allergen for days to years before developing ACD. In contrast, irritant rashes usually develop the same day as exposure.
- Different routes of exposure may have different effects. ACD may occur with no documentation in standard texts, such as the PDR®, for medications taken by oral or parenteral routes.

The appearance of a rash can provide important clues to the cause:

- Rashes from airborne substances will often develop on skin left uncovered; most common are the neck and upper chest, the face or the back of wrist and forearms. Occupational contact dermatitis is unlikely to appear in covered areas such as the abdomen.
- A rash on the hands that occurs after wearing gloves is more likely glove dermatitis than a result of the product handled. A rash due to the product handled while wearing gloves and loose sleeves often occurs in the gap between the two at the wrists and lower forearms.
- Swelling of the eyelids can be due to either ACD or from allergic conjunctivitis from airborne dusts. The timeline and appearance can be used to distinguish the two: conjunctivitis will develop and resolve within hours of exposure with only soft swelling; ACD will develop slowly, remain for days and often develop a light crust or other surface change.
- Swelling of just one eyelid could result from touching the face with a contaminated glove.

Diagnosing the source of ACD requires patience and diligence. Connecting a particular rash to the workplace begins with finding patterns that match exposure and timing. While specific product patch testing has helped some dermatologists confirm the allergen source, this approach is seldom used in practice due to the unavailability of standardized reagents. The more typical approach is removing the affected employee from the workplace for three to five days to see if the rash resolves, and allowing a controlled re-exposure once the rash clears. If the rash recurs, the only effective management is permanent removal from that environment.

Common allergens found in pharmaceutical operations include: codeine, sulfonamides, formaldehyde, sodium bisulfite, azithromycin, p-aminophenol, methyl dibromo glutaronitrile, ranitidine, penicillins, cephalosporins and many preservatives like thimerosal and quaternium-15.



This article was prepared by **Thomas Kibby, MD, MPH,** BarnesCare physician.