

Adverse nail reactions and Paresthesia from "Photobonded Acrylate Sculptured" Nails"

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There have become available, recently both in this country and abroad, "sculptured" artificial nails based on acrylates that are "photobonded." The bonding is said to be similar to urestorative dental bonding" commonly used by many dentists worldwide.

After these nail preparations are serially applied, including the acrylates, the hands are placed in a "photobonding box."

Case Reports

Dr. James E. Ethington of Greenfield, Wisconsin, recently informed me that two of his patients experienced an inflammatory reaction of the nails and paronychia complicated by prolonged paresthesia of the fingertips following exposure to a "sculptured photobonding" treatment.

One month after I had received Dr. Ethington's reports, I had occasion to treat a patient who had returned from France, where she had received "photobonding sculptured nail treatment." Her symptoms and signs were very similar to those of Dr. Ethington's patients, including a severe paresthesia of the distal phalanges of all her fingers. She also had a positive patch test reaction to methyl methacrylate monomer.

Dr. Baran of Cannes, France, was kind enough to send me advertising for "nail bonding" that was displayed at the "First Hand Congress" held in France in September, 1989.

Paresthesia

A long recognized, unique feature of allergic contact dermatitis caused by the acrylic monomer is a distressing paresthesia of the fingertips on the form of a burning sensation, tingling, and slight numbness.' The paresthesia may persist for several weeks after the dermatitis has subsided. I have also seen this type of paresthesia in two orthodontists who became sensitized to the acrylic monomer in bonding cement. The prolonged paresthesia caused by the monomer may be due to the fact that acrylic monomer is a powerful solvent that readily penetrates damaged skin and thus produces an inflammation of the nerve endings in the fingers. One report describes paresthesia that persisted for at least three months in a patient who was allergic to a hydroxyethyl methacrylate compound³

In 1957, the first reported cases of severe reaction to acrylic "sculptured" nails involved a dermatologist with a severe disfiguring onychomycosis of all his fingers in the days before griseofulvin was available.' In an attempt to improve the appearance of his nails, he applied a mixture of methyl methacrylate monomer and acrylic polymer to fashion artificial nails. An excruciatingly painful onychia and paronychia of all his fingernails occurred, which required treatment with strong opiates. The pain and discomfort persisted for several weeks.

The Food and Drug Administration received so many complaints of severe reactions to methyl methacrylate monomer from consumers that, after litigation, on July 3, 1974, the District Court in Chicago issued an injunction prohibiting the further manufacture or interstate shipment of a product called "Long Nails," which contained a methyl methacrylate monomer."

To comply with this injunction, the

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manufacturers of artificial nail products are now using ethyl, or isobutyl, methacrylate monomers. One preliminary study seemed to indicate that these "newer" monomers did not cross-react with the methyl methacrylate. Marks et al show, however, that cross-reactions definitely do occur between the various methacrylate monomers.

From my own experience and that of colleagues, it would seem that the newer reformulated artificial nail products seem likely to cause as many problems as the old methyl methacrylate-containing formulations, since it has been shown both in animals and humans that various acrylate monomers used in nail products are sensitizers that may cross-react.

Fisher' reported permanent loss of fingernails from sensitization and reactions to acrylic monomer in a preparation designed to make artificial nails.

This patient experienced marked erythema, edema, and pain of the eponychial and paronychia tissues with persistent paresthesia of the fingertips. Gradual destruction of the nail plates occurred, and because no regrowth of the nails resumed in ten years, the loss of the fingernails was permanent.

Conclusion

Various nail preparations containing the acrylates may produce adverse nail reactions accompanied by prolonged paresthesia. However, severe nail damage and paresthesia has not been reported with the cyanoacrylate (Crazy Glue) preparations.

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