45

HOW DOES THE ALLERGIC TATTOO REACTION REALLY LOOK, AND HOW TO TEST FOR ALLERGY

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Aim: "Allergy" essentially is a pathomechanism and not a phenomenology. Allergic reactions are hypersensitivity reactions mediated by the immune system following a period of sensitisation against an allergen such as a tattoo pigment. We aimed to study allergy patch test in tattoo reactions suspected to be allergic.

Methods: 90 patients with reactions which might be allergic were patch tested with batteries of 42 common allergens, 32 disperse dyes, 8 tattoo ink samples and individual culprit inks (n=25). 8 had cross reactivity in old tattoos of the same color as the reacting tattoo. Samples were applied under occlusion on the back for 48 hours, read after 2, 3 and 7 days. Punch biopsies of tattoos were taken for histology.

Results: 77 tattoos with reactions had been inked with red or red nuances. Tattoo reactions started 2 weeks to 5 years after the tattoo was made. Common allergens: 19 (21%) positive to nickel (related to other metal contacts such as piercing), 5 (6%) to cobalt, 0 to paraphenylenediamine PPD. Disperse dyes and tattoo ink series: negative with red "fingerprint" only. Culprit ink: 2 of 25 (8%) positive to red/purple, both patients suffering ulcero-necrotic tattoo reactions. Cross reacting patients: no special finding. Their biopsies were dominated by dermal inflammation which could be fiery, some cases with epidermal hyperplasia or granulomatous reactions.

Conclusion: Tattoo reactions including those with cross reactions being highly indicative of an allergic mechanism generally failed to react to allergy patch test with common allergens, disperse dyes, tattoo inks and their individual culprit inks. The allergen is unlikely to be directly present in the tattoo ink stock product, and the allergen apparently is formed inside the dermis through haptenization likely to involve tissue proteins. PPD was blank negative and there is no indication that primary aromatic amines, PAA, play a role. The sensitisation period is remarkably long. Some raw stuff especially originated or generated from industrial and impure red azo pigment must bare some role, but the nature and structure of such culprit(s) behind allergy of tattoos remain obscure. From cross reacting tattoos it became clear that, clinically, allergic tattoos are those with aggressive inflammation in any part of the tattoo inked with that problem color and with a period of weeks or months from tattooing to onset of reaction. Histology dominated by dermal inflammation under the dermo-epidermal interface may include epidermal hyperplasia and granulomatous reactions patterns. There is at the moment no test to recommend for preventive or diagnostic testing of tattoo inks or manifest allergy from tattoos, and there is no indication or specification of the raw material(s) in tattoo ink stock products, which especially in red inks is the primer of the much delayed development of allergic tattoo reactions.