

PRELIMINARY AND SHORT REPORTS

THE EFFECT OF AGING A SOLUTION OF SILVER NITRATE ON ITS CUTANEOUS REACTION

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A solution of silver nitrate (10 per cent) was being used to mark patch test sites for delayed reactions. The solution had been on the patch test tray for about six months. The case F. T., a white male aged 26, a machinist with dermatitis pedis, was patch tested with samples from his footwear, tincture of merthiolate and aqueous mercuric chloride 1:1,000. The samples from the dress shoes—heel lining and counter—merthiolate and mercuric chloride were 4-plus. The testing samples from the work shoes and slippers were ringed with silver nitrate to check delayed reactions. Twenty-four hours later, the patient telephoned that the black circles had broken out and were itching. The sites showed edema, erythema and vesiculation. The reactions resembled those observed from mercury and nickel. The dermatitis from the silver nitrate persisted about 6 days with symptoms. The samples from the work shoes and slippers did not show delayed reactions.

After an interval of two weeks, tests were done on the opposite arm with the same solution of silver nitrate exposed to air (uncovered), silver nitrate 10 per cent, sodium nitrate 10 per cent, silver foil, silver nitrate 10 per cent, freshly prepared, and argyrol 5 per cent. These were read in forty-eight hours and are shown in Figure I. Several weeks later, tests were done on the back with a solution of silver nitrate 5 per cent (6 weeks old), silver chloride powder and silver iodide 10 per cent. The silver nitrate 5 per cent showed a reaction as intense as the 10 per cent. The silver chloride and iodide were negative.

The history in case F. T., revealed frequent past exposures to silver compounds. Argyrol had been used as a household cutaneous antiseptic and had been instilled in the conjunctiva and nasal cavity. The tincture of merthiolate had had past exposures on normal and traumatized skin. For 10 years, he had had intermittent attacks of dermatitis pedis, the present one for two months. This involved the left lateral heel. A number of proprietaries had been applied to kill the fungus but the dermatitis did not respond. A friend advised a solution of silver nitrate, the age or concentration not known, which was to be applied morning and night. After two weeks of this treatment, the dermatitis suddenly began to spread and many pustules appeared. These were opened and soaked with tincture of merthiolate. A diagnosis of contact dermatitis was made. The eruption responded promptly.

COMMENT

An aged solution of silver nitrate when applied to an eczematized skin—two weeks seemed to be the incubation period—produced local cutaneous signs of sensitization, associated with generalized cutaneous sensitization as shown by a positive patch test. It is well known that silver nitrate decomposes when exposed to light and air. This decomposition can be prevented when the solution is kept in an amber bottle (1). Mellor (2) states that the decomposition results in the formation of small quantities of colloidal silver, silver nitrite and nitric acid. Sollmann (3) states that protein compounds of silver, the colloidal oxides and even metallic silver liberates a small quantity of silver ions. It is interesting that our patient reacted to the ionizable silver contacts. He had worn a band ring, machined from a half dollar, a number of years without producing a dermatitis.

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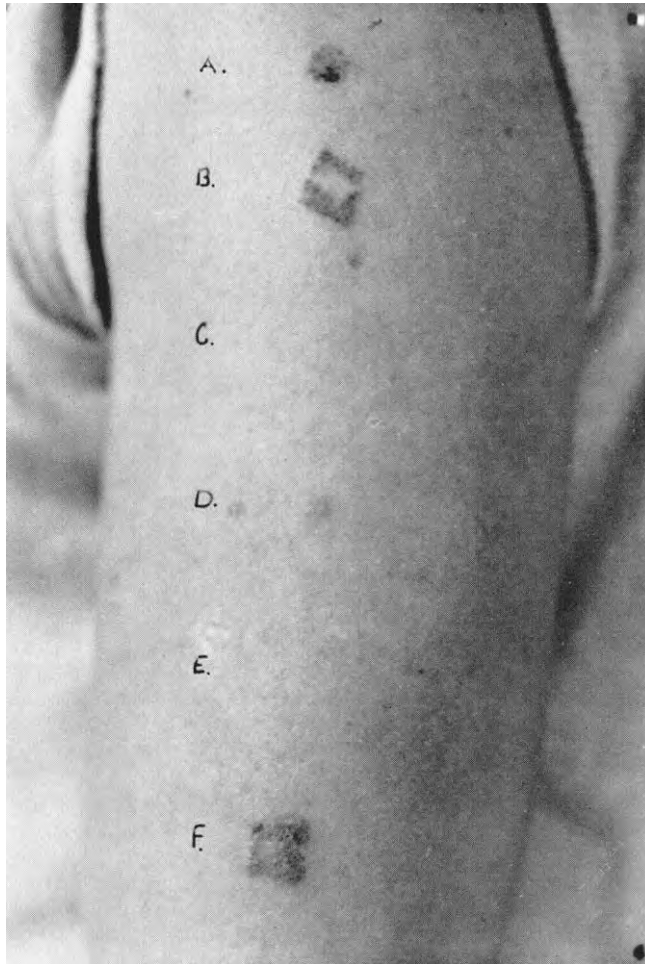


FIG. I

- A—Solution of silver nitrate 10%, aged, uncovered.
B—Same as "A" but covered.
C—Solution of sodium nitrate 10%; negative.
D—Silver foil; showing a slight erythema with appreciable edema.
E—Solution of silver nitrate 10%, freshly prepared; negative.
F—Solution of argyrol 5%.

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