

SKIN SENSITIVITY TO STREPTOMYCIN. III*†‡

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IN ONE earlier paper,¹ we discussed the cause, symptoms, diagnosis, and treatment of skin sensitivity to streptomycin. A later one² elaborated on dry patch tests for sensitivity to both streptomycin and dihydrostreptomycin (for which the abbreviation DHS is used). The present study is later and more detailed and includes data from several nurses studied earlier with some new cases added.

Ninety-one nurses were tested. (Table I.) Only 3 had never handled streptomycin or DHS. All 3 of these controls were negative to streptomycin and DHS patches. One had been tested in the earlier series and was also negative at that time.

Twenty-eight nurses had handled streptomycin but not DHS. None of them had ever had any eruption from streptomycin nor had ever been given any of the drug therapeutically. Eighteen had been tested previously and were negative. Streptomycin had been handled from 1 week to 4 years and the average for the whole group was 16 months. Practically all of the nurses

TABLE I. CONTACT WITH STREPTOMYCIN

NO. OF NURSES	HANDLED DHS	TIME STREPTOMYCIN HANDLED—RANGE	AVERAGE TIME STREPTOMYCIN HANDLED	HOW OFTEN HANDLED STREPTOMYCIN—RANGE	LAST TIME STREPTOMYCIN HANDLED—RANGE
28	No	1 week to 4 years	16 months	daily to monthly	same day to 1 year ago
63	Yes	1 week to 4 years	18 months	daily to monthly	same day to 1 year ago

had handled the drug several times daily but 5 had contact with it less often. The time that had elapsed since handling streptomycin varied from the same day to one year previously. One-half of the nurses had contact within 2 weeks of the test and most of these the same day. All were negative to streptomycin and DHS dry patch tests.

The remainder of the nurses tested (63) had handled both streptomycin and DHS. Contact with the former averaged 18 months and ranged from 1 week to 4 years. In frequency, also, there was little difference, being from several times daily to once a month or less. The elapsed time also was from the same day to one year previously with over one-half having had contact within a day of the test. (Table II.) Twenty-eight had been tested one year ago, were negative then, and are still negative. Twenty-six had not been tested previously but were negative at this time.

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Of the remaining 9 nurses, we had tested 6 previously. Four had been positive then and were positive now. One (M) who had been negative one year ago was now positive and one (J) who had been positive a year ago was now negative (no contact with either streptomycin or DHS for 5 months previous to test). Two nurses (Z) had not been tested before. One gave a positive and one a negative reaction. This second nurse is included in this group because as long as the patch remained in contact with her skin she complained of swollen and itching eyes. These symptoms also occurred on handling either streptomycin or DHS but she had never had a skin eruption. The other nurse in this group (N) first developed a rash in 1947 and received elsewhere an intradermal test to streptomycin. This was read at that time as positive and was followed by a generalized urticaria which lasted 3 months. An evanescent papular eruption was produced by the patch test.

TABLE II. COMPARISON OF PREVIOUS DRY PATCH TESTS FOR STREPTOMYCIN AND DHS SENSITIVITY AND THE PRESENT ONES

INITIAL	NO. OF NURSES	HANDLED STREPTOMYCIN	HANDLED DHS	PREVIOUS TEST		PRESENT TEST	
				STREPTOMYCIN	DHS	STREPTOMYCIN	DHS
	3	no	no	neg. (1)	neg. (1)	neg.	neg.
	28	yes	no	neg. (18)	neg. (18)	neg.	neg.
	54	yes	yes	neg. (28)	neg. (28)	neg. (54)	neg. (54)
Q	4	yes	yes	pos.	pos.	pos.	pos. (2)
M	1	yes	yes	neg.	neg.	pos.	neg.
J	1	yes	yes	pos.	neg.	neg.	neg.
Z	2	yes	yes	none	none	pos. (1)	pos. (1)
N	1	yes	yes	intra-dermal pos.	none	pos.	pos.

Three nurses had been treated therapeutically with streptomycin, 2 a year before and the other 5 months before test. Two had handled DHS and streptomycin quite frequently. None of these had developed any contact sensitivity and all were negative to streptomycin and DHS dry patches.

Two nurses who had extensive contact with streptomycin and DHS without developing any eruption had previously developed skin reactions to injected penicillin. One had a contact sensitivity to penicillin the other none. Streptomycin and DHS dry patch tests were negative. (Table III.)

TABLE III. CONTACT WITH DHS

NO. OF NURSES	HANDLED STREPTOMYCIN	TIME DHS HANDLED—RANGE	AVERAGE TIME DHS HANDLED	HOW OFTEN HANDLED DHS—RANGE	LAST TIME DHS HANDLED—RANGE
63	yes	1 day to 10 months	5½ months	daily to every 2 weeks	same day to 8 months ago

Of the 63 nurses who had handled DHS, the contact has existed from one day to 10 months with the average for the group 5½ months. Contacts varied from several times each day to about once every 2 weeks, 49 of the 63 nurses

handling the drug daily. The last contact before test was from the same day to 8 months before, with 29 having handled the drug the day of the test. (Table II.)

Four nurses gave positive reactions to the dry DHS patches. All of these were also positive to the streptomycin dry patches. Two had been tested 9 months previously and were also positive. The other 2 had not been tested before. Only one of the 4 had developed an eruption although all had had daily contact with streptomycin and DHS, streptomycin from 14 months to 3 years and the DHS from 4 months to 10 months.

One nurse (M) who had a positive dry patch to streptomycin was negative to DHS but had only handled it for one week 2 months previous to the tests. Two other nurses (Q), now positive to dry streptomycin patches and who had positive reactions to dry DHS 9 months ago, were now negative to dry DHS patches. Both of these had a great deal of respect for the drugs and only handled them or syringes containing them with rubber gloves. Why there had been a change in the DHS sensitivity and not in the streptomycin sensitivity is not known although the streptomycin sensitivity was the oldest and was developed before any DHS was used in the hospital. One of these also has a contact sensitivity to penicillin.

Eight of the 91 nurses admitted to having developed a skin eruption since handling streptomycin. Four of these were negative to dry patch test and on investigation were believed to have other contact sensitivities. The other 4 (Q) were positive to dry streptomycin patches and all are either now positive to dry DHS patches, or were 9 months ago.

These eruptions lasted from 2 days to 5 months, the average being about 2 weeks. Treatment consisted of any or combinations of the following: anti-histamine tablets, ointment, or cream, Calomine lotion, epinephrine, ultra-violet lamp, or no treatment.

DISCUSSION

With more contact with DHS, the points elaborated in an earlier paper² seem to be borne out. Without contact, no sensitivity develops. Skin sensitivity to streptomycin does not mean there will also be a sensitivity to DHS unless the latter is frequently handled. So far, we have found no contact sensitivity to DHS without contact sensitivity to streptomycin but none of our nurses have handled only DHS. Apparently, skin sensitivity to DHS and streptomycin may be lost, probably temporarily, by avoidance of contact with them. At any rate, the precautions to be taken by those handling the drugs to prevent the development of sensitivity might possibly cause this sensitivity to disappear if these rules are religiously followed. Otherwise, there seems to be no better treatment of the skin eruption at the present time than antihistamine in tablets orally, and by local application in ointments or creams. We routinely test these patients to molds and hyposensitize to any to which they show positive immediate or delayed skin reactions even though they be the equivocal *Trichophyton* or *oidiomycin*. The nurses so treated have felt that their resistance

to further eruption is somewhat increased. Even with the best intentions, occasional contact cannot be prevented unless another type of work is chosen.

It is again reiterated that these tests should be done routinely on personnel handling the drugs, probably every 6 months. The rules for prophylaxis given previously should be rigidly carried out although we are forced to admit that certain individuals, regardless of contact, will probably never develop a skin sensitivity.

Certain very sensitive individuals have noted exacerbation of rash or swelling of the eyelids while the patch is in contact with the skin. We make a practice in such patients of leaving the patch on but 24 hours instead of the usual 48.

As far as percentage of sensitization is concerned, 7.7 per cent of those handling streptomycin became sensitized while 6.3 per cent of those handling DHS became sensitive.

The present series has demonstrated also that the dry patches do not lose in effectiveness on being stored at room temperature for a year.

SUMMARY

1. Contact sensitivity to streptomycin and DHS may develop in those frequently handling the drugs if certain precautions are not taken.

2. Certain individuals do not become sensitized and others may lose their sensitivity by avoidance of contact.

3. The best treatment of the eruption, at present, seems to be with anti-histamine drugs.

4. The dry test patches used are still effective after storage at room temperature for one year.

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