

THE APPLICABILITY OF SKIN TESTS FOR SULFONAMIDE HYPERSENSITIVITY IN CHILDREN

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Leftwich (1) has reported an intradermal test to indicate the state of hypersensitivity to the sulfonamide drugs in adults. The following observations represent an unsuccessful attempt to confirm the conclusions of Leftwich in children.

Few children show apparent hypersensitivity reactions during the administration of the sulfonamide drugs. Fink and Smith (2) estimate the number of such children to be less than 1 per cent of those receiving these drugs. These hypersensitive children generally show during the course of sulfonamide administration unexplained fever, or fever and rash, which disappears when the drug is discontinued. About half of the children showing such reactions will show an immediate recurrence of the fever or the rash when even small amounts of the same drug are readministered at a later date. Some of these immediate reactions are severe and alarming. An immediate reaction definitely contraindicates any further administration of that particular sulfonamide to the patient. Obviously a precise test to determine the presence of a hypersensitive state would be of great value in avoiding such reactions.

Simple solutions of the sulfonamide drugs, as in other drug allergies, have been notably unsuccessful in producing positive intradermal reactions in patients known to have had sulfonamide reactions. Several investigators have reported positive skin tests in certain individuals when the sulfonamides were applied as patch tests. The literature relative to these attempts to indicate sensitivity has been reviewed by Leftwich.

In an analogous instance, Damashek and Colmes (3), investigating amidopyrine hypersensitivity, were unable to produce positive skin-reactions with aqueous solutions of amidopyrine, but when amidopyrine was incubated in the presence of human serum, the mixture became capable of producing an erythema and wheal when injected endermally into a hypersensitive patient. When Davis (4) reported that the sulfonamides are adsorbed to plasma albumin we speculated that such albumin-bound sulfonamide in the patient's plasma might be the antigenic factor involved, and that plasma from patients ingesting sulfonamide might therefore be an appropriate material for endermal tests. We attempted passive transfer tests in normal adults on several occasions using intracutaneous injections of serum from patients receiving sulfadiazine followed after 24 hours by serum from patients with sulfadiazine hypersensitivity at the

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same site. At another site the order of the injection of the sera was reversed. No clear cut endermal reactions were demonstrable.

Following the publication of the report of Leftwich, direct tests with "sulfonamide-containing" serum were made in children suspected of sulfonamide reactions, using the technic as he outlined.

CASE MATERIAL

Intracutaneous tests were performed on 19 children under 12 years, all of whom had demonstrated previous febrile reactions during the administration of sulfathiazole (1 case) or sulfadiazine (18 cases). Nine of these patients had responded with immediate fever and rash to subsequent oral administration of their sensitizing sulfonamide. The other ten patients were similarly tested with oral drug but showed no reaction to its readministration.

MATERIALS

Blood serum was obtained under aseptic technic and used for testing purposes within a period of 5 hours. Normal adult or child serum was used as a control

TABLE 1

SERUM USED	PATIENTS TESTED			RESULTS
	Normal children	Sulfathiazole "reactor"	Sulfadiazine "reactors"	Positive skin-tests
Sulfadiazine-containing	5		18	0
Sulfathiazole-containing		1		0
Sulfamerazine-containing			10	0
Sulfonamide-free (control)	5	1	18	0

test. "Sulfonamide-containing" serum was obtained from adults and children who had been receiving sulfonamide orally for at least 5 days. The concentration of "free" sulfonamide in the whole blood of each donor was in excess of 3 mg per hundred ml, (usually 8-12 mg per hundred ml).

METHOD

Each patient was given an intradermal injection of 0.1 ml of at least 3 different sera on the same forearm. The sera in each case represented (1) normal adult or child serum, (2) adult "sulfonamide-containing" serum, and (3) child "sulfonamide-containing" serum. The original wheal and any erythema were measured, the site of injection was observed for reaction for 20 minutes, and observed again at intervals up to 24 hours.

RESULTS

The results are summarized in table 1.

In no case could any discernible difference be detected in the reactions produced by the sulfonamide-containing serum and the control serum. The wheal produced by the injection of any of the sera was usually 3-5 mm in diameter. By

the end of 20 minutes the wheal had diffused to an area 8-11 mm in diameter, and the erythema at the end of this time generally measured 15-25 mm in diameter. No delayed reactions were produced by sera of adults and children, nor were any systemic reactions observed.

CONCLUSIONS

Skin-testing for sulfonamide-sensitivity by the method of Leftwich using intradermal injections of serum from patients receiving sulfonamide medication has not proved applicable to children.

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