

THE RELATIONSHIP OF STREPTOCOCCUS FECALIS TO PSORIASIS*

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Causal relationship between microorganism, and psoriasis has never been demonstrated, although many types of streptococci have been thought to exert an influence. This paper concerns itself with streptococci of the Lancefield "D" group known as streptococcus fecalis.

Barber (1) cited a number of instances in which acute psoriasis or an acute exacerbation of psoriasis followed scarlet fever or a streptococcal infection of the throat, with a latent sensitization period of 10-21 days prior to the appearance of the psoriatic lesions. This interval was similar to the lag between throat and joint involvement in rheumatic fever. Kierland (2) cultured strep. viridans from the throats of psoriatic patients. After animal inoculations, he concluded that there was insufficient evidence to incriminate streptococci as the cause of psoriasis.

High titre positive agglutination reactions against streptococci of the Lancefield groups A and G were found by Norrlind (3) in patients with acute gutate psoriasis. These positive reactions occurred twice as frequently in psoriatic patients as in non-psoriatic controls. There is, however, a strong possibility that the positive agglutination reactions were due to secondary infection of the psoriatic lesions or concurrent pyogenic infection elsewhere. In 1950 (4) he again considered that he had found the same correlation between psoriasis and streptococci and suggested that modern antibiotics be tried in the treatment of this disease. Antibiotics of various kinds have been administered to psoriatics for treatment of other conditions, and with rare exceptions, no beneficial results from these antibiotics have been noted.

Stokes and Ford (5), reported excellent response in 2 cases of psoriasis when they were treated with terramycin. This, however, is not the usual experience in psoriatic therapy.

Correlation between the streptococcus fecalis content of the feces and the presence of psoriasis was discussed by Swartz in 1943 (6). He observed: (1) patients having psoriasis have a larger proportion of strep. fecalis in the fecal flora than do non-psoriatic individuals, due to the fact that many psoriatics have redundant colons which is conducive to an accumulation of this organism; (2) full blooded negroes do not have psoriasis; (3) s. fecalis could not be isolated from the feces of so-called full blooded negroes; (4) a large percentage of patients with psoriasis have some irregularity of bowel movements and showed some evidence of stasis in the colon when visualized by a barium enema; (5) administration of an autogenous vaccine of s. fecalis had a beneficial effect on psoriasis, and if given in too large a dose caused a Herxheimer type of reaction.

The purpose of this investigation was to determine whether s. fecalis is present

Received for publication January 13, 1953.

in the intestinal tract of negroes. Its importance exists in the fact that there has been an attempt by Ostrolenk et al (7, 8) to correlate the presence of enterococci with fecal contamination in the nut meats, frozen food, and freshly packed crab meat industry. Workers in these fields were predominantly negroes. If the feces of negroes did not contain *s. fecalis*, this correlation would obviously be useless.

In addition, attempt was made to determine the effect of administration of an autogenous vaccine of *s. fecalis* on psoriatic patients.

BACTERIOLOGY

S. fecalis was first named by Andrews and Horden in 1906 and is one of the Lancefield "D" group of organisms of the division enterococci. The group is composed of four members: *s. zymogenes*; *s. durans*; *s. fecalis* and *s. liquifaciens* and is characterized by their ability to grow at a low of 10 C. and a high of 45 C. with survival at 60 C. for 30 minutes. They grow in the presence of 40 per cent bile, 0.1 per cent methylene blue and 6.5 per cent sodium chloride, and have a high degree of resistance to the sulfonamides (9) and penicillin. Differentiations within the group is made on cultural data (10). All behave alike in agglutination reactions (11). *S. fecalis*, the most common of the enterococci, is a constant inhabitant of the human gastro-intestinal tract.

INVESTIGATIVE METHODS

(1) Samples of feces obtained from 10 very dark, non-psoriatic negroes were cultured for *s. fecalis*.

(2) Samples of feces of 10 white non-psoriatic patients were cultured for *s. fecalis*.

(3) Samples of feces obtained from 94 white psoriatic patients were cultured for *s. fecalis*.

(4) Search was made to find dark so-called full blooded negroes with psoriasis.

(5) Autogenous vaccines of *s. fecalis* were prepared and standardized at 50 million organisms per ml. These were then diluted to 50 thousand organisms per ml. The vaccine was administered by intracutaneous injections starting with 0.05 cc. of the highest dilution and then increasing the dose gradually to 1.0 cc. of the vaccine containing 50 million organisms per cc. Subsequent injections continued on that level. Multiple injection sites were used when the dose went above 0.2 cc. to avoid excessive pain.

(6) Patients were divided into two groups; one group of 39 patients received injections twice weekly and another group of 38 patients were treated once a week.

(7) A stock vaccine of mixed streptococci of the same count as the autogenous vaccine was administered to 10 psoriatic controls and continued for more than 6 months.

(8) Buffered saline was administered to 7 for patients further control.

(9) Barium enemas were done on 36 psoriatic patients and compared with a similar number of examinations of non-psoriatic individuals.

(10) An attempt to get a history of irregular bowel movements was made in 66 non-psoriatic controls.

RESULTS OF INVESTIGATIONS

Comparison of the *s. fecalis* count in one gram of feces obtained from psoriatic patients as compared with white and negro non-psoriatic controls is presented in table 1.

Individual counts varied widely and is consistent with findings of previous investigators (11).

Vaccines of *s. fecalis* were administered to 88 of the original groups. Within one month the number of patients under treatment dropped to 67. At the end of three months 54 were still under treatment. Remaining under treatment at the end of a year were 43 patients. Sixteen continued for a total of 18 months, then the experiment was discontinued.

A compilation and comparison of results between those treated with auto-genous *s. fecalis* vaccine and those treated with a vaccine of pooled streptococci is shown in table 2.

TABLE 1
Average s. fecalis per gm. of feces millions

Patients with psoriasis.....	100.7 m.
White controls.....	107.9 m.
Negro controls.....	115.4 m.

TABLE 2

	CURED		IMPROVED		NO CHANGE		WORSE	
	No.	%	No.	%	No.	%	No.	%
Psoriatics treated with auto-genous <i>s. fecalis</i> vaccine	6	11.11	10	18.51	18	33.33	20	37.01
Psoriatics treated with vaccine of pooled streptococci	0	0	2	25.00	3	27.77	3	37.77

None of the beneficial results below are different than one would expect in a group of psoriatic patients under any other type of treatment or no treatment at all. There was no difference noted between the group which received vaccine once weekly and those which were given the vaccine twice weekly.

In the control series above, two patients stopped treatment after the first few injections because of exacerbations. The control group of 7 psoriatic patients to which buffered saline was administered was discontinued because of a lack of cooperation. Comparison of barium enema findings between psoriatics and non-psoriatics did not reveal any remarkable differences.

Negroes with psoriasis were not difficult to find. Many of them were extremely dark and apparently full blooded.

History of irregularities of bowel movements in patients with non-psoriatic dermatoses were not essentially different from the type of histories obtained from patients with psoriasis. All types of variations from so-called normal to extremes of diarrhea and constipation were elicited in both groups.

DISCUSSION

Of greatest interest was the Herxheimer type of reactions which developed in many patients after the initial injections. Similar reactions have been recorded by Norrlind (12) in his investigation of bacterial sensitization as a factor in atopic dermatitis. Exacerbations of the psoriatic lesions on occasions were so severe that some of the patients refused to continue treatment. In many instances the periods of exacerbation occurred several times and necessitated, in four patients, further dilution of the vaccine. This reaction occurred not only when the autogenous vaccine was used, but also with the stock streptococcus vaccine. It did not occur when saline alone was used, although in three cases lesions did appear at the sites of injection, exhibiting the characteristic Koebner phenomenon, and it occurred in many of the patients who were treated with either of the vaccines.

What is the explanation for these exacerbations? (1) Does the streptococci fecalis play a definite role as an etiologic agent in psoriasis? If it does why did half of the control group treated with stock streptococcus vaccine develop exacerbations after the initial injections? (2) Does this type of reaction represent an allergic flare-up to an antigen which is common to all streptococci? If it does, we must assume that psoriasis has, at least, an allergic component, similar to that described by Norrlind in atopic dermatitis and by Boe (13) in staphylococcal infections of the skin. In both of these, cutaneous reactions to the various bacteria were demonstrated. In the cases of psoriasis treated with *s. fecalis* vaccine, this phenomenon also was demonstrated, since .05 cc. of diluted vaccine given intradermally was essentially a skin test. As a result of the initial injection the majority of the patients receiving the vaccine developed an erythematous wheal at the injection site within 24 hours. Furthermore, if such an assumption is true, one would expect that administration of the vaccine would tend to desensitize the patient, since a bacterial vaccine is in a sense an allergenic extract. This did not occur. Satisfactory answers are not available to these posed questions. It is possible that streptococci is one of the etiologic factors, but it is quite evident that the observations require further elucidation.

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