

THE MAZZINI FLOCCULATION SLIDE TEST COMPARED  
WITH THE KOLMER-WASSERMANN AND  
KAHN STANDARD TESTS  
IN LEPROSY\*

By

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The Washington Serology Conference was held in Washington, D.C. between October 20th and October 31st, 1941, under the auspices of The United States Public Health Service. The aim of the conference was the rapid accumulation of information as to the reliability of a group of relatively new technical methods for the serodiagnosis of syphilis.

A total of 19 author serologists, or their representatives, participated and carried out 30 separate procedures. Sensitivity was based on reports from specimens from syphilitic donors, and was computed by adding the percentage of positive reports to one-half the percentage of doubtful reports. Specificity was based on reports from specimens from non-syphilitic donors, by adding the percentage of negative reports to one-half the percentage of doubtful reports.

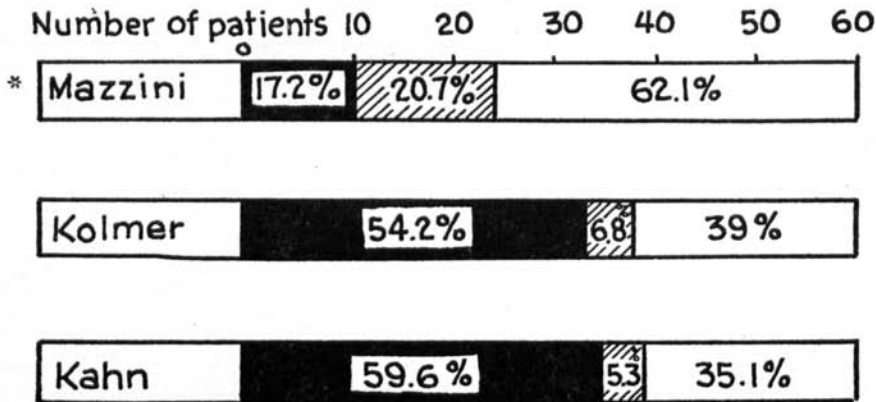
The 1,038 cases tested in the evaluation studies (7) were chosen to correspond to cases, both syphilitic and non-syphilitic, occurring in general practice, including various cases of tuberculosis and leprosy.

In this evaluation survey one of the author serologists, Mazzini, performed his flocculation slide test with the following results on the sera of 60 leprosy donors: 17.2 per cent were positive against 54.2 per cent positive with Kolmer's simplified complement fixation test and 59.6 per cent positive with the Kahn standard test. All patients in this series were believed to be free from syphilis. The donors were selected from our serological records, a certain number of patients yielding consistent positive reactions and a certain number of patients showing negative reactions being taken (Table 1).

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\*From the laboratory of The National Leprosarium, Carville, Louisiana. Published with the permission of the Surgeon General of the United States Public Health Service.

TABLE 1. Results of testing 60 serums from patients with established diagnosis of leprosy in any stage. Taken from the Washington Serology Conference. Venereal Disease Information Vol. 23, May, 1942.



\* Mazzini flocculation slide test  
 Kolmer simplified complement fixation  
 Kahn standard

Shaded areas positive  
 Hatched areas doubtful  
 Blank areas negative

The number appearing in the several areas gives the percentage of positive, doubtful, and negative reports.

Mazzini published his test in 1939 (6). In an exhaustive study of results obtained in over 100,000 specimens, Mazzini claims that his technique has been shown to possess a high degree of specificity and sensitivity. In addition, economy of time and materials and ease of preparing the reagents are important features of the test.

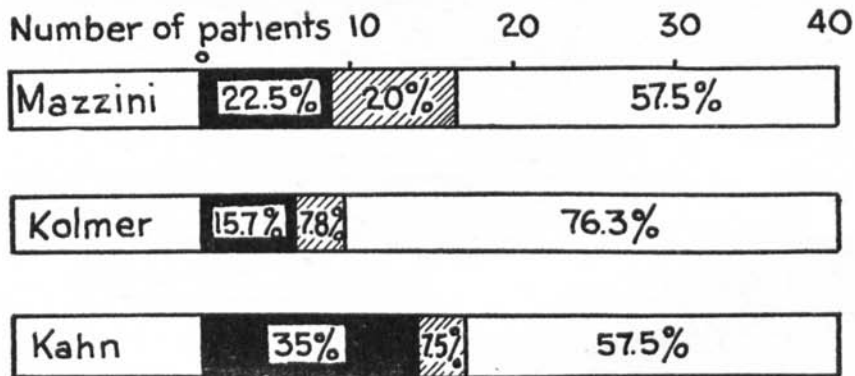
It was believed that the results obtained by Mazzini were of sufficient significance to warrant a comparative study of the results obtained with the Kolmer-Wassermann complement fixation test and the Kahn standard test with sera of a larger number of leprosy patients. It also appeared that the Mazzini test might be a valuable addition to our present procedures.

In October, 1928, the Kolmer-Wassermann complement fixation test and the Kahn standard test were adopted as routine procedures in our laboratory, and since that date they have been employed in all serological reactions. Kline's diagnostic slide test was added in 1930 but, because of its high sensitivity in our patients, it was discontinued in 1938. Laughlen's flocculation slide test (4), as well as Leiboff's flocculation slide test (5) were also given a fair trial, but both tests appeared to be too sensitive and were not adopted. It has been our experience in conducting the various sero-diagnostic tests for syphilis that the greatest percentage of positive reactors is found in the advanced

lepromatous type of leprosy, while the smallest percentage is in the bacteriologically negative neural type patients, with directly proportional percentages between the two types. Our experience has been confirmed by other workers (1, 2, 3).

Before attempting the study of the Mazzini flocculation test, the Venereal Disease Research Laboratory at Staten Island kindly offered to run the Mazzini test, Kolmer complement fixation test, and the Kahn standard test on the sera of 40 presumably non-syphilitic patients, parallel with this laboratory in order to check our technique. Our results were comparable with their report. The report submitted by the Venereal Disease Research Laboratory is presented in Table 2. Of the 40 cases, 6 were positive with all three techniques; and in 19 instances all 3 tests were negative. In the remaining 15 cases, there was more or less discrepancy, Kolmer's technique having 2 anticomplementary reactions.

TABLE 2. *Results of testing 40 serums from patients with established diagnosis of leprosy in any stage. From the Venereal Disease Research Laboratory, Staten Island, New York. July, 1942*



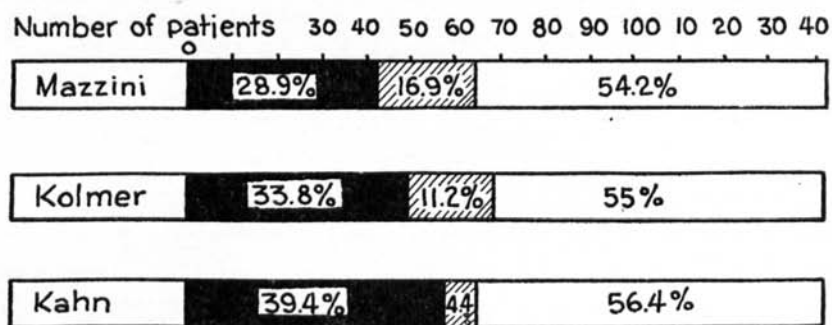
The 142 cases selected represented the various types and stages of progression of the disease and were, as far as we were able to ascertain, free from syphilis.

The Mazzini antigen and buffered saline used were obtained from the Venereal Disease Research Laboratory at Staten Island; the Kahn's antigen was supplied by Dr. Reuben L. Kahn; the Kolmer antigen, antishoop hemolysin, and lyophile complement were commercial products obtained from Sharp and Dohme. The sheep cells were obtained by bleeding our own sheep. The techniques of all authors were carried out without modification.

The results of the 142 sera are presented in Table 3. It is apparent

that fewer positive results were obtained with the Mazzini flocculation slide test than with either the Kolmer-Wassermann or Kahn standard test—28.9 per cent with the former; 33.8 per cent with the Kolmer technique and 39.4 per cent with the Kahn standard test. Of these, there were 27 instances in which all 3 techniques were positive; and in 67 cases, negative. In the remaining 48 cases, there was more or less discrepancy. The Mazzini test showed the greatest number of doubtful reactions, having 16.9 per cent as compared to 11.2 per cent with the Kolmer test and 4.4 per cent with the Kahn standard test. All three tests approximate each other in negative reactions, though the Mazzini test had the least number.

TABLE 3. Results of testing 142 serums from leprosy patients in any stage. From the laboratory of The National Leprosarium, Carville, Louisiana.



The results in the two series, Tables 1 and 3, show very marked differences. It is apparent that fewer positive results were obtained with the Mazzini test than with either Kolmer's or Kahn's test, but it is evident that, with an increase in sensitivity over the Mazzini test, the Kolmer and Kahn tests also showed fewer doubtful reactions. In clinical practice a doubtful report may often be of value.

The group of 60 patients in Table 1 contained a greater number of positive Kolmer and Kahn reactions than did groups in Tables 2 and 3. One reason for this is due to the fact that a special effort was made to select a certain number of donors for the evaluation survey who gave consistently positive results in our hands, though presumably non-syphilitic. The 40 sera in Table 2, sent to the Venereal Disease Research Laboratory, were from recently admitted patients. The sera from the 142 cases, Table 3, were taken at random, previous serological findings being disregarded. All cases, however, were non-syphilitic as far as we were aware.

## CONCLUSIONS

When examined with the Mazzini flocculation slide test, the sera of presumably non-syphilitic leprous patients exhibit a tendency toward falsely positive results, but to a lesser degree than with the Kolmer simplified complement fixation test and the Kahn standard test.

The Mazzini flocculation slide test is rapid and not particularly difficult to interpret, providing the observer has had sufficient experience in serology. The antigen, as it is supplied, is stable, and the preparation of the active antigen is simple. Such consideration would seem to make the Mazzini flocculation slide test particularly valuable for use in mobile laboratories and small or isolated leprosaria, where it may be inconvenient or too expensive to perform the Kolmer-Wassermann and Kahn tests or other recognized tests for syphilis. The test is also a valuable addition to our present procedures. Where facilities are available, as they are at the laboratory of the National Leprosarium of Carville, multiple tests are preferable to any single test.

## ACKNOWLEDGMENT

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