LIVER FUNCTION IN PSORIASIS[1]

A Preliminary Report

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The cause of psoriasis has frequently been mentioned as being on a metabolic basis; therefore it was thought advisable to study liver function in this disease. It was deemed necessary to study carefully the history of the patients especially with reference to liver damage such as due to alcohol, arsenic, syphilis or other causes. In order to ascertain the liver function in psoriatics, 34 patients with psoriasis were subjected to the following tests: serum bilirubin, bromsulfalein, urobilinogen, total cholesterol, Hanger test, alkaline serum phosphatase and icterus index. The following tests with the results obtained are listed.

SERUM BILIRUBIN

The normal serum bilirubin varies from 0 to 1 mg. percent. Lichtman (1) stated that this determination is used to detect hemolytic jaundice as well as any condition which causes obstruction of either the intra- or extra-hepatic bile passages. Serum bilirubin determinations were done on 32 patients. Normal values were found in 28 cases. In 4 cases of chronic or moderate drinkers the values were increased from 1.8 to 4.7 mg. percent.

BROMSULFALEIN

Normal individuals show from 0 to 5 percent of the dye in the blood at the end of 1 hour. Lichtman (1) noted that the bromsulfalein test is of utmost value in the diagnosis of disturbances of the excretory function of the liver. Normal values were found for bromsulfalein in 27 out of 31 patients. Retention of 8 to 30 percent of the dye in the blood at the end of 1 hour was found in 4 cases of chronic alcoholics with psoriasis one of which had clinical jaundice.

UROBILINOGEN

The amount of urobilinogen excreted in the urine in 24 hours by the normal adult varies from 0 to 4 mg. Normal values for urobilinogen were found in 27 out of 30 psoriatics. Seven to 8.7 mg. of urobilinogen was found in the 24 hour urine specimens of 3 chronic alcoholics with psoriasis.

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TOTAL CHOLESTEROL

The total cholesterol content of normal blood plasma is from 140 to 250 mg. percent. When I (2) published my paper on "Cholesterol Balance and Low Fat Diet in Psoriasis" in 1938, hypercholesteremia did not exist in the 22 cases of psoriasis studied. Normal cholesterol content of blood plasma was found in 28 out of 33 patients. Three patients who did not use alcohol showed 262, 304, and 317 mg. percent of total cholesterol while one chronic alcoholic showed 129 mg. percent and another moderate drinker showed 278 mg. percent.

HANGER TEST

Hanger noted the capacity of the serum of subjects with hepatic parenchymal damage to flocculate a colloidal suspension of cephalin-cholesterol complex. The procedure is thought to be an index of activity of liver damage rather than of residual function. Normal serum produces from a 1 plus positive reaction in 24 hours to a 2 plus positive reaction in 48 hours. The Hanger test was normal in the 7 cases in which it was done.

ALKALINE SERUM PHOSPHATE

The normal value of alkaline serum phosphatase is 0 to 13 King Armstrong units. According to Lichtman (1) the diagnostic value of serum phosphatase estimations is of limited but definite value as a supplementary aid to the clinical differentiation of the several types of jaundice. The alkaline serum phosphatase was normal in 31 cases.

ICTERUS INDEX

The icterus or bilirubin index varies from 0 to 6 in normal humans. An icterus index was done on 32 patients. A normal icterus index was found in 19 cases. A moderate increase, 8 to 11, was noted in 11 moderate drinkers or chronic alcoholics with psoriasis. One patient with psoriasis and chronic alcoholism with jaundice had an index of 15. Repeated tests were done on one patient who entered the hospital after acute alcoholism. The icterus index was 10 on admission and gradually returned to normal after 10 days in the hospital.

DISCUSSION

Not all of the tests were performed on all patients because some did not continue to report and others were lost and could not be reached. No attempt was made to go into the intricate problems of liver function or to evaluate the various tests. The above group of tests for liver function are considered representative and adequate by internists. The range of normal readings for some tests varies in different laboratories. Therefore we employed one technician to carry out the determinations in order to maintain a constant standard. No specially devised tests were used.

The opinion that skin changes are often associated with liver disease is well known. Itching and color change associated with jaundice, and telangiectasia

in cirrhosis are two common examples. However, much less has been known about the possible skin changes in minimal or subclinical liver disease. The liver disease may be the cause or the effect of the skin disease; also there may be no relationship between the two, or both may be due to some common cause.

Matsunobu (3) in 1930 reported a functional disturbance of the liver in 30 percent of his cases with various skin diseases. Burgess and Rabinowitch (4) performed liver function tests on 216 patients who had 27 different skin diseases and found abnormal liver function in about half of their cases. Because of experiments on rabbits, Iwama (5) concluded that a close relationship between the disfunction of the liver and kidneys and dermatitis existed.

Eichenlaub and Osbourn (6) wrote an excellent article on "The Role of the Liver in Congestive Eczema" which is now in press. Most of their cases dealt with varicose eczema or localized dermatitis associated with edema of the skin. Among their controls was one case of psoriasis who had abnormal liver function. The patient however also had beginning congestive heart failure which may have accounted for the abnormal liver function. Their cases of congestive eczema were cured or improved by treatment aimed at improving liver function. This does not obtain in cases of psoriasis with liver disease.

Very little has been written about liver function in psoriasis although treatment with liver extract (Gruenberg (7), Spiethoff (8), Madden (9), and others) has been used for many years. Genner and With (10) did liver function tests on 74 patients with psoriasis; 10 were children under 16 years, 31 were women, and 33 were men. They employed 5 functional liver tests, two of which were used by us (icterus index and urobilinogen). No abnormality was noted in liver function in most of their cases. They did find that tar baths or the use of similar absorbable chemicals appeared to bring about a slight disturbance in liver function. This abnormality disappeared when the treatment was discontinued. Guldberg and Hannisdal (11) performed liver function tests in 6 cases of psoriasis and found no abnormalities. Smithies (12) cited a patient with cholecystitis and subhepatic abscess necessitating 2 operations. After the second operation the patient had a recurrence of previous symptoms followed shortly thereafter by psoriasis. After medical treatment for liver disease the psoriasis disappeared and had not recurred for 9 years; however, 2 other cases diagnosed as psoriasis with liver disease and treated by his methods were not cured.

The patients in our series were representative and not chosen for certain reasons. They were the last 34 patients seen in the office or our clinics before the tests were made. It is possible that our results might have been much different if only one age group or those with a history of previous liver damage were chosen.

Three patients were between 10 and 20 years old, 8 between 20 and 30, 5 between 30 and 40, 4 between 40 and 50, 4 between 50 and 60, 3 between 60 and 70, and 5 between 70 and 80 years old. The unusually large number in the last decade can be accounted for by the fact that they were hospitalized for other ailments and were readily available when our study began. The sexes were equally divided.

Psoriasis had been present under 1 year in 6 cases, 1 to 5 years in 5 cases, 5 to 10 years in 5 cases, 10 to 20 years in 6 cases, 20 to 30 years in 5 cases, 30 to 40 years in one case, and over 40 years in 4 cases.

The lesions consisted of generalized plaques in 13 cases, generalized guttate papules in 5 cases, plaques or papules localized at the usual sites in 12 cases, almost general involvement in 1 case, and 1 case of psoriatic exfoliative dermatitis.

I have been impressed by the observation that psoriasis often followed liver damage. In several cases psoriasis followed cirrhosis of the liver associatedwith chronic alcoholism, arsenical hepatitis and syphilitic hepatitis. It was arbitrarily decided that small amounts of alcohol meant an occasional drink, moderate amounts meant regular but not excessive drinking, and chronic alcoholism meant regular, excessive drinking. Alcohol consumption varied from none in 7 patients, small amounts in 7 patients, moderate amounts in 13 patients to excessive chronic alcoholism in 7 patients. Approximately 20 percent of the patients were chronic alcoholics and 39 percent were termed as moderate drinkers.

Ten patients who drank moderate or excessive amounts of alcohol stated that the eruption was worse after the use of any alcohol. New lesions would appear, old lesions itched more or old lesions became more active. Ten patients did not notice any effect on the psoriasis when they indulged in increased amounts of alcohol.

Among the moderate or excessive drinkers psoriasis appeared after the use of alcohol in 15 patients, was present before alcohol was used in 3 patients and the association was indefinite in 2 patients.

History of conditions which might have affected the liver was not obtained in 27 cases. Psoriasis appeared months to years after arsenical hepatitis in 1 case, malaria with jaundice in 1 case and acute catarrhal jaundice in 2 cases. Psoriasis had been present for some time when pernicious anemia, jaundice with therapeutic malaria, and jaundice of unknown cause was discovered in one case of each.

CONCLUSIONS

1. Careful histories were taken with reference to previous liver damage and liver function tests were done on 34 psoriatics.
2. Thirty-nine percent of our cases were moderate drinkers.
3. Twenty percent of this group were chronic alcoholics.
4. Alcohol aggravated psoriasis in half the patients who used it.
5. Psoriasis appeared at varying lengths of time *after* the use of moderate or excessive amounts of alcohol in 75 percent of those who used alcohol moderately or in excess.
6. Liver function is normal in most psoriatics.
7. Liver function is abnormal in some cases of moderate or excessive alcoholics with psoriasis who do not have clinical evidence of liver disease.
8. Nothing in our study shows a direct relationship between alcoholism and psoriasis.

DISCUSSION

DR. THEODORE CORNBLEET: The number of liver function tests is increasing, yet none of these is specific for any condition or disorder. There is difficulty in interpreting them. With an organ such as the liver, that has so many different functions, it is only natural that it should reflect changes present elsewhere in the body. The skin is no exception in showing repercussions in the liver and has functional associations there. Thus lupus erythematosus effects changes in liver function, as shown by Vitamin A storage and otherwise. Such changes throw no light on original causes but are probably merely incidental. The liver, too, is the site for the formation of acetone bodies. We find the latter increased in quantity when the skin is inflamed and in proportion to the area involved. This again does not mean that the acetone bodies produce the skin changes. It connotes only that cutaneous changes influence hepatic function. I am rather surprised therefore that Dr. Madden found so little liver deviation from the normal in his function tests, especially since there seems to be a lipoid link in psoriasis.

Could Dr. Madden relate the degrees of change in function with size of area of the skin that is involved? I think the study highly worth while.

DR. JACOB H. SWARTZ: In some of these cases, especially with superimposed infections, I wonder if the psoriasis of long-standing plays a part or whether it is the superimposed infection that is the contributory factor? We do see similar findings in atopic dermatitis.

DR. SAMUEL M. PECK: A number of years ago I was concerned with experiments attempting to demonstrate early liver damage and dysfunction by the study of the blood cholesterol and cholesterol ester fractions. We found that when there was extensive skin involvement due to almost any chronic dermatitis the cholesterol ester level dropped. However, whatever such data may finally mean it is not important to deduce from such data that we are necessarily dealing with real etiologic agents as far as the dermatitis itself is concerned. In studying patients with psoriasis we found some peculiarities in Vitamin A metabolism. When normal patients are given 10,000 to 200,000 units of Vitamin A intramuscularly there is very little if any effect on the Vitamin A blood levels. However, when patients who have low vitamin blood levels such as those with Darier's disease or those patients who have ichthyosis the vitamin A blood levels can be raised. However, in many of the psoriatic patients injections of fairly large doses of Vitamin A intramuscularly instead of causing a rise in the blood Vitamin A in many instances actually cause it to diminish and almost disappear temporarily.

DR. PAUL GROSS: Dr. Madden deserves credit for having reopened the problem of liver function and its effect on the cause of psoriasis.

Dr. Kesten and I have studied several hundred cases of psoriasis in the last seven years. Even though we confined ourselves to the performance of two tests, namely: the determination of serum cholesterol and the cephalin flocculation test, we found a sufficient number of abnormal reactions to conclude that the disturbance of liver function plays an important part in certain cases of psoriasis. In reviewing about 80 case histories at random a few months ago, I was surprised to find about 6% positive cephalin flocculation tests. These tests were performed in Dr. Hanger's laboratory and when found positive the tests were repeated on several occasions. It was interesting to observe the reversal of the positive cephalin flocculation test in patients treated with lipotropic substances (soy bean lecithin: The interrelationship of fat metabolism and liver function is too well known to be discussed here.

We also have paid attention to the history of alcoholism and are of the impression that excessive indulgence in alcohol has an adverse influence on the cause of psoriasis.

It was gratifying to hear Dr. Madden's report and I hope it will stimulate wider interest in the role which disturbances of liver function play in psoriasis and other skin diseases.

DR. MADDEN: The discussors' questions are answered in the text. I thank the members for their discussions.

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