

THE ETIOLOGY OF SPLENIC ANEMIA
OR BANTI'S DISEASE

PRELIMINARY NOTE *

J. L. YATES, M.D.
MILWAUKEEC. H. BUNTING, M.D.
MADISON, WIS.

AND

H. T. KRISTJANSON, M.D.
WAUWATOSA, WIS.

Pure cultures of diphtheroid organisms apparently identical with or closely related to the *Bacillus hodgkini* have recently been obtained by us from two spleens removed surgically in the treatment of splenic anemia.

Case 1 was under the care of Dr. J. J. Bellin of Green Bay, Wis., who kindly submitted blood-smears for examination before operation and sent the spleen immediately after its removal. The spleen was carefully sterilized externally by boiling before cultures were made from its interior.

Case 2 was a patient in the Milwaukee County Hospital, where the blood was studied before and after splenectomy and where part of the bacteriologic and experimental observations were made.

Histologic studies of the two spleens confirmed the clinical diagnosis of splenic anemia or the early stage of Banti's disease. Inoculation of dogs and rabbits was made with cultures of the organism obtained from Case 2 and with a culture obtained from a lymph-gland of a case of Hodgkin's disease, in which the diagnosis had been confirmed histologically and hematologically. In each case there were produced changes that were characteristic of the disease as described by Banti. These experiments were conducted independently at the pathologic laboratories of the University of Wisconsin and of the Milwaukee County Hospital and the results compared later.

These findings appear significant in view of the results of A. G. Gibbons,¹ who found in stained sections of six cases of splenomegaly Gram-staining streptotrichal organisms, at times segmented and at times appearing as bacillary forms.

The following clinical evidence seems confirmatory of the importance of the observations cited:

Atrophic cirrhosis of the liver, as a complication of the more usually accepted glandular variety of Hodgkin's disease, has been observed repeatedly, but is infrequent. Earlier stages of a periportal connective tissue overgrowth have, however, been noted comparatively often in the more chronic cases. This rarity of advanced cirrhosis in Hodgkin's disease is probably due, as Klein² has suggested, to the fact that life is, as a rule, insufficiently prolonged. In anemia splenica (Banti's disease) the first stage usually lasts from three to five years, a period quite in excess of the average duration of life in anemia lymphatica (Hodgkin's disease). This difference in duration, and in addition the relatively greater concentration of toxins in the portal circulation in Banti's disease, may explain why a Laënnec's cirrhosis is the constant terminal feature in the latter condition.

* From the Pathological Laboratories of the University of Wisconsin and of the Milwaukee County Hospital.

1. Gibbons, A. G.: *Quart. Jour. Med.*, January, 1914, p. 153. Streptotrichal Organisms in the Spleen in Certain Cases of Splenomegaly, *Current Comment*, *THE JOURNAL A. M. A.*, May 23, 1914, p. 1664.

2. Klein: *Berl. klin. Wechschr.*, 1890, xxvii, 712.

In the clinical course of splenic anemia as described by Banti³ there is the characteristic alternation of periods of progression and remission which one of us⁴ has described as so constantly present in Hodgkin's disease and has attributed to variations in the degrees of toxemia. There is the striking difference of greater chronicity in the former condition. Moreover, in splenic anemia recurrent fever has been noted which may correspond quite exactly with the febrile state first described by Murchison, but commonly designated as Pel-Ebstein.

Banti recognized that splenic anemia might be accompanied by lymph-gland enlargement in later stages and that the changes in the spleen in this affection and in pseudoleukemia-splenolymphatica were similar, wherefore he thought it possible to regard "anemia splenica as a pure form of pseudoleukemia splenica." In other words, Banti's disease might be Hodgkin's disease of the spleen.

The foregoing bacteriologic, histologic, hematologic and clinical evidence seems to warrant the conclusion that splenic anemia or Banti's disease and Hodgkin's disease are closely related, if not only variations in manifestation of a single type of infection.

THE USE OF ANTISTREPTOCOCCUS
SERUM IN CHRONIC ARTHRITIS *HOMER K. NICOLL, M.D.
CHICAGO

An extensive literature bears witness of the attempts which have been made in the past few years to make some use of passive immunization by means of antisera against various forms of streptococcus infection. The serums prepared by Marmorek, Aronson, Moser and Menzer were perhaps given the most exhaustive trials. It appears that only a moderate and only a variable degree of success has been attained as compared with some of the effective immune serums, and it seems probable that some of the factors in the production or transfer of the immune bodies are at fault. The causes of this discrepancy have been sought in various parts of the immunizing process such as a lack of specificity in the organism used, the absence of polyvalence, insufficient dosage, and the apparently demonstrated fact that the streptococcus develops no true antitoxin, so that any immunity must be entirely phagocytic and would require frequent renewal of the specific opsonins in the immune serum to produce any permanent effect.

In view of the recent investigations which seemed to indicate that the streptococcus was a common agent in the production of the chronic as well as the acute forms of arthritis,¹ it was thought that possibly some of the defects of former serum treatment might be avoided and a serum produced which would be of benefit in some of the intractable cases of chronic joint disease. The serum used was a polyvalent horse serum prepared by Drs. Gatewood and Moore² work-

3. Banti: *Beitr. z. path. Anat. u. z. allg. Path.* (Ziegler's), 1898, xxiv, 21.

4. Yates: *Bull. Johns Hopkins Hosp.*, 1914, xxv, 180.

* This work was carried on under the Dane Billings Fellowship and in the laboratories of the Otho S. A. Sprague Memorial Institute.

1. Beattie: *Jour. Path. and Bacteriol.*, 1904, ix, 272. Davis, D. J.: *Chronic Streptococcus Arthritis*, *THE JOURNAL A. M. A.*, Sept. 6, 1913, p. 724. Billings, Frank: *Chronic Focal Infections and Their Etiologic Relations to Arthritis and Nephritis*, *Arch. Int. Med.*, April, 1912, p. 484; *Chronic Focal Infection as a Causative Factor in Chronic Arthritis*, *THE JOURNAL A. M. A.*, Sept. 12, 1913, p. 819.

2. Heinemann and Gatewood: *Jour. Infect. Dis.*, 1/12, x, 416.