

muscle of the turtle, found a decrease in spike voltage due to a partial depolarization of the heart muscle fibers and an accelerated repolarization following vagal stimulation(9). A shortening of the repolarization process in the auricle may therefore be assumed to be responsible for the appearance of the Ta

wave.

Conclusions. Vagal stimulation leads to the temporary appearance of a very pronounced Ta wave in the standard leads, particularly in lead II. This is explained by the abnormal repolarization process of the auricular muscle during and shortly after the stimulation.

9. Churney, L., Ashman, R., and Biggins, C. H., *Proc. Soc. Exp. Biol. and Med.*, 1949, v70, 123.

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Anticomplementary Properties of Bone Marrow in Certain Diseases (17905)

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A low blood serum complement is often found in patients suffering of widespread disease of the bones(1). Because of this observation it was thought of interest to investigate the complement activity of the serous fluids expressed from the coagulate obtained from sternal bone marrow. Throughout this study the sternal puncture technic of v. d. Merwe(2) was employed. After the induction of local anesthesia with 2% novocain, the corpus sterni was punctured at the level of the second intercostal space. As a rule, the first drops obtained were smeared on slides for direct microscopic examination. After this, from 0.5 to 1 cc of the sternal marrow was withdrawn, ejected into a small serological test tube, and allowed to coagulate. After clotting the material was centrifugalized at 3000 r.p.m. for a period of 10 minutes and the supernate removed. For complement assay the hematocrit method of Jordan was used. One tenth of one cc of the fluid was employed and the titer obtained was compared with that of the blood serum which was tested at the same time.

It was found that in most cases the complement activity of the sternal fluid compared

favorably with that of the blood serum. However, a small number of marrow fluids showed no complement activity at all while their corresponding sera possessed normal complement activity. It seems unlikely that these fluids should lack complement because a certain amount of blood is always obtained during puncture. It was found that the addition of complement components from normal serum failed to reactivate these marrow fluids. When these fluids were however mixed with active normal sera, they inhibited the complement activity of the latter. It was not feasible to work with larger quantities of sternal marrow since too great an admixture of blood would occur. It was observed that the anticomplementary power of these fluids resisted temperatures of 56°C and even 60°C so that it is possible to consider the anticomplementary activity as relatively thermostable (Olhagen)(3). In contrast to Olhagen's anticomplementary factor or factors the anticomplementary activity of these fluids is not acquired after heating of the fluids. In other words, they exist in the unheated fluid. In a number of patients whose sera and sternal marrows showed no complement activity, the sternal fluids were also tested for anticomplementary effects but none were observed.

1. Jordan, F. L. J., *Acta Med. Scand.*, 1942, CXI, Fasc. IV-VI, 372.

2. v. d. Merwe, C. F., a, *Beenmergonderzoek in de Kliniek*, Thesis, Utrecht, 1935; b, *Bonemarrow Studies in the Clinic—Folia Haemat.*, 1936, v55, 108.

3. Olhagen, B., *Acta Med. Scand.*, Supple., 1945, 162.

To date 126 patients have been studied. Of these, 15 showed the anticomplementary activity described above. In 19, complement activity was not entirely lacking but was found to be less than that observed in their blood sera. In 6, the complement level of the sternal fluid was definitely higher than that of the corresponding blood serum.

Of interest is the case of a man, 24 years of age, hospitalized because of a thrombosis of the splenic vein. The day before splenectomy was performed it was found that his sternal marrow fluid exhibited no complement activity while his blood serum gave a normal titer of 33. Immediately after the operation his serum complement level was 25. On the day following the operation his sternal marrow fluid complement rose from 0 to 32, and was of almost the same magnitude (35) as that of the blood serum drawn at that time. One month, postoperatively, the values were 58 and 51, respectively. (Fig. 1). A leucopenia and thrombocytopenia observed prior to operation disappeared after the splenectomy. Correlating this observation with the condi-

tion of the spleen in 126 patients it was discovered that they can be divided into two groups: (1) includes patients in whose sternal fluids complement levels are less than 20% of their corresponding blood sera values, and (2) comprises those cases in whom the sternal complement values do not deviate more than 20% from those obtained from their corresponding blood sera.

In Group I (34 patients), 21 showed an enlargement of the spleen. In Group II (86 patients), 17 exhibited an enlargement of the spleen. It can therefore be stated that in this series of cases, 60% of the patients showing anticomplementary activity of their sternal marrow fluids possessed an enlarged spleen, while in the second group splenic enlargement occurred in only 20% of the cases.

In 6 cases the complement values of the sternal marrow fluids were found to be 20% higher than those of their blood sera. In 4 of these 6 cases an enlargement of the spleen was observed.

Though the number of patients examined is relatively small statistically, it may be stated that Group I was composed of cases suffering of malignant granuloma, cirrhosis of the liver, Werlhof's disease, myeloid leukemia, thrombosis of the splenic vein, hemolytic icterus, and Besmer-Boeck-Schaumann disease. It is therefore likely that the peculiar behavior of the sternal marrow fluid is not a characteristic of a given disease, but shows some relationship to disorders of the spleen.

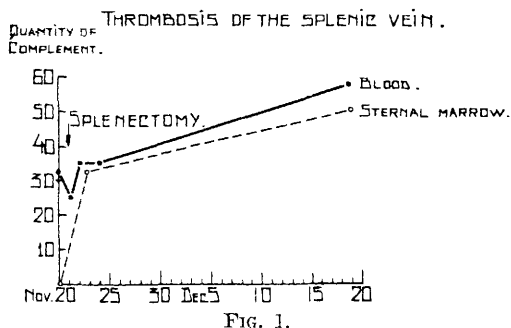


FIG. 1.

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Milk Agent and Natural Antisheep Agglutinins in Mice of Inbred Strains.* (17906)

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Higher incidence and higher titers of natu-

ral antisheep agglutinins have been found in C57 Black mice than in mice of other inbred strains. The same strain manifested also a better response to immunization with sheep

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