

7400 P

Local Cerebral Anaphylaxis in the Dog. II.

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Experimental data were presented¹ on 5 dogs in which each was sensitized with horse serum in the left cerebral motor area after injury to this region. Following an interval of 2 to 4 weeks they received intravenous injections of horse serum. These injections were followed in 4 of the 5 animals by transient right-sided hemiparesis.

The present communication concerns similar experiments on 35 dogs. Three, serving as controls and receiving normal saline into the brain instead of sensitizing protein, showed no subsequent focal reaction on repeated intravenous injection of the test protein. Twenty-one of the remaining 32 dogs showed evidence of local cerebral irritability after intravenous injection of the same protein with which the brain had been previously sensitized. In many of the dogs the local reaction could be repeated and *was always confined to the side opposite the sensitized cerebral hemisphere*. In a few animals which were kept alive over a long period of time the same reaction occurred almost as often as the intravenous injection was made, provided proper intervals between injections were allowed. One animal showed a focal convulsive seizure which became generalized and eventuated in death.

For the most part horse serum and egg albumen were used as the sensitizing proteins. A few protocols are cited to bring out special points:

Dog No. 17. Small female Airedale.

- 1- 7-32. The left side of the brain was exposed and an agar disc containing horse serum, 1 mm. thick and 1.5 cm. in diameter, was placed against the exposed area and held in place by suturing the temporal muscle over it.
- 1-12-32. 1 cc. of horse serum was injected intravenously. In a few minutes symptoms of general anaphylaxis appeared (defecation and urination).
- 2-26-32. 2 cc. of horse serum were injected intravenously. In 2 minutes defecation and ~~urination~~ urination occurred. In 12 minutes *slight but definite dragging of the right forepaw was observed*.
- 3- 9-32. Into a pocket formed by a small rubber ring placed over the *right* cerebrum 0.1 cc. of fresh egg albumen was injected between the dura and pia mater.

¹ Davidoff, L. M., and Kopeloff, N., *Proc. Soc. Exp. Biol. and Med.*, 1931, **29**, 71.

- 4- 1-32. 5 cc. of fresh egg albumen were injected intravenously. In 2 to 4 minutes the dog defecated and urinated. *Definite moderately severe weakness of the left forepaw was noted.*

This experiment is particularly valuable in that each antigen served as a control on the other. It is evident that the focal weakness observed was no mere coincidence but occurred as a result of a reaction which had taken place in a previously sensitized (even though uninjured) area of brain tissue, following the injection of the same antigen into the blood stream.

Another dog whose protocol is omitted was sensitized to horse serum placed in a collodion sac between the pia and the dura mater on the right side of the brain. When injected with horse serum intravenously 3 weeks later this dog developed weakness in the left extremities followed by twitching of the left side of the face (Jacksonian seizure). Generalized convulsions, coma and death followed within one hour.

DOG No. 40. Irish tan and white female terrier.

- 3- 9-33. This dog which had previously received a number of injections of horse serum both into the left cerebrum through a trephined hole and later intravenously, without signs of anaphylaxis, was now injected with 1 cc. of fresh egg albumen into the left brain by way of the defect in the skull. No reaction occurred.
- 3-21-33. 1 cc. of fresh egg albumen was injected into the left cerebrum.
- 1-22-34. 0.5 cc. of fresh egg albumen was injected into the left cerebrum.
- 2-13-34. 4.5 cc. of fresh egg albumen were injected intravenously. Within 2 minutes vomiting occurred. Within 3 minutes *definite weakness of the right foreleg* lasting several minutes was observed.
- 2-15-34. 1 cc. of fresh egg albumen was injected intravenously. No reaction followed.
- 2-16-34. 5 cc. of egg albumen were injected intravenously. Almost immediately there was slight vomiting. Within 4 minutes local flushing occurred on the *left* side of the head, later spreading to the face, ear, conjunctiva, and eventually, but less markedly, to the right side of the head, face, etc. Within 10 minutes there were clonic spasmodic contractions of the muscles of the right shoulder girdle and foreleg with increasing weakness of this extremity. This weakness lasted about 24 hours.
- 2-19-34. 5 cc. of egg albumen were injected intravenously. The results were essentially like those observed on 2-16-34.
- 2-21-34. 5 cc. of egg albumen were injected intravenously. The same reaction was noted as on 2-16-34 but was of lesser intensity.
- 3-23-34. 5 cc. of egg albumen were injected intravenously. The skin reaction and clonic jerks as well as weakness of the right anterior extremity again occurred in a pronounced manner.

This dog is still alive and is to receive monthly intravenous injections of egg albumen. The experiment outlined above with this

animal illustrates several points: 1. Repeated intravenous injections of the same antigen did not appear to desensitize the animals. 2. Repeated injections at short intervals reduced the degree of severity of the reaction while increasing the interval tended to restore the vigor of the response. 3. The skin over the scalp which was apparently accidentally sensitized during the injection into the brain acted as a graphic indicator of what was taking place in the cerebrum following the intravenous injection.

7401 C

Effect of Splenectomy on Natural Resistance of Albino Rats and Mice to Histamine Poisoning.

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In order to determine whether the drop in natural resistance following the removal of the spleen is of a general character or is specific for certain types of infections and toxemias, the effect of the removal of the spleen in rats and mice on their resistance to histamine was observed. In these studies rats free of *Bartonella muris* infection and mice free of *Bartonella muris*, *Eperythrozoon coccoides* and *Klossiella muris* were used.¹ These latent infections are adversely influenced by splenectomy.¹

Ten splenectomized rats of Wistar stock received ergotamine acid phosphate one week after operation in amounts ranging from 700 to 1200 mg. per kg. of body weight. Those receiving 1000 to 1200 mg. per kg. died; the rest survived. Of 10 control rats the M.L.D. was found to lie between 1000 and 1200 mg. per kg. of body weight.

A similar number of splenectomized mice free of latent infections likewise survived as large an amount of ergotamine acid phosphate as the control mice. The M.L.D. of histamine in the mice of this strain was 1700 to 2000 mg. per kg. of body weight.

Splenectomy in rats and mice free of latent infections does not alter the resistance of these animals to histamine poisoning. In view of the fact that the removal of the spleen depresses the natural resistance to many infections, it is interesting that the resistance to a chemical poison such as histamine is unaffected.

¹ Marmorston, Jessie, in press.