should rather be compared to the rabbit. The rabbit does not show the explosive anaphylaxis of the guinea pig, unless the inoculation is given intravenously. The occurrence of this in man is rare and under conditions not yet understood and not explainable by the guinea pig. This occurrence is occasionally shown after the first injection of serum.

The ordinary serum sickness in man is not grave, nor need the Arthus phenomenon in the rabbit be grave. Therefore, any attempts at finding a method of antianaphylaxis which does not resensitize, for practical purposes, in man should be tried out in the rabbit as well as the guinea pig.

We wish to thank Dr. Vaughan for his generosity and kindness in sending us his split products, and for his courtesy in permitting one of us to finish our work in his own laboratory.

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Notes on sensitization with tuberculin to tubercular rabbit-serum.[1]

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These notes are some of the results of our study of sera, toxins and related substances. We have noted by means of the kymograph the changes in pressure and respiration produced when we injected into normal dogs, treated with tuberculin or other toxic substances, the sera of normal and diseased animals. A number of interesting facts were found in this way, regarding substances in the serum of animals having tuberculosis, which we think worth reporting.

The tubercular rabbit serum with which these results were obtained, was drawn from rabbits which had been infected 35 days previously with a virulent culture of bovine tuberculosis injected intravenously. The serum was defibrinated and separated centrifugally.

[1] This paper was presented by title at the meeting of the American Association for the Advancement of Science, Dec. 27, 1909.

We obtained the described reactions with the serum both before and after filtration, through a Berkefeld filter. The serum which was employed the day after drawing gave the reaction, and serum, after standing in the ice-box for ten days, also gave it. The same serum after three weeks did not give the reaction (protocol, Dec. 22, 1909).

The anesthetic used consisted of 10 mgs. of morphine sulphate followed in about thirty minutes by 1.5 gms. of chloretone and a little ether. The animals used were dogs averaging thirty pounds in weight.

The results obtained are summarized as follows:

1. Dogs injected intravenously with 3 c.c. of serum from a rabbit infected with tuberculosis do not suffer a reduction in arterial pressure. The serum was injected into the femoral vein and pressure taken in the carotid (protocol of Nov. 17, 1909).

2. Dogs that have been injected intravenously with 5 c.c. of crude tuberculin and five minutes later with 3 c.c. of serum (administered in the same way), which had been obtained from a tubercular rabbit do not suffer a reduction in arterial pressure. The same is true when the serum is administered first and then the tuberculin five minutes later (protocol of Nov. 17, 1909).

3. Dogs sensitized by a subcutaneous injection of 5 c.c. of tuberculin, which is followed in from twelve to eighteen hours by an intravenous injection of 1.5 to 3 c.c. of tubercular rabbit serum *do suffer a marked reduction in arterial pressure.*

4. This reaction is specific as far as we have been able to test it (protocol of Dec. 4, 1909). The following sera have been tested: glanders (horse), typhoid (human), antityphoid (horse), antistreptococcus (horse) normal rabbit, normal horse and a two per cent. solution of Witte's peptone. We have one record showing that the 5 weeks' old tubercular rabbit serum which did not cause the reaction in a sensitized dog, was reactivated by the addition of an equal amount of fresh rabbit serum.

5. Based on this reaction an attempt was made to immunize two rabbits against tuberculosis without success. The rabbits were injected with one cubic centimeter of the crude tuberculin and beginning upon the next day received 2 c.c. of the tuberculosis serum on alternate days during a period of ten days.

Each rabbit received five injections of the tuberculosis serum of 5 c.c. each.

The subcutaneous injection of 10 c.c. of the tuberculosis serum into three rabbits, each of which had been previously sensitized by an injection of 1 c.c. of crude tuberculin, caused death in from 24 to 50 hours.

6. This reaction, if found to be sufficiently specific, may be used as another method for the diagnosis of tuberculosis. This test would be made on an animal sensitized with tuberculin, by an injection of the patient's blood-serum.

7. We have obtained in normal dogs, by the intravenous injection of 4 c.c. of serum from rabbits in the paralytic stage of hydrophobia (seventh day after subdural inoculation), a marked depression in the arterial blood pressure. A similar reaction was caused by the intravenous injection of a substance (probably cholin), in small doses, obtained from the brains of calves and rabbits.

8. We made the following experiments, in order to ascertain what relation this reaction (see paragraph 3 above) has to anaphylaxis, as we now know it. Five dogs were employed. Dog No. 1 received a subcutaneous injection of 2 c.c. of normal horse serum. No. 2 received 1/75 c.c. No. 3 received 1/100 c.c. No. 4 received 1/1,000 c.c. No. 5 received two injections of 1/10,000 with an interval of four days between the injections. None of these dogs gave a reaction which could be recorded on the kymograph, when given intravenously on the following day 10 c.c. of the same normal horse serum. These results apparently indicate that the reaction is simply one of the many phases of sensitization or increased susceptibility, following the action of toxic substances. It resembles then the anaphylactic reaction only to this extent, namely, that although differing from one another, each is simply one of the many phases of increased susceptibility. We have tentatively named the phenomenon observed by us, vasophylaxis.

We desire to thank Dr. Wm. H. Park, Director of the Research Laboratory, Department of Health, New York City, for his kindness in furnishing us material for these experiments.