

found in ischemic (Goldblatt) kidneys, in which the author postulated an endocrinologic role for the affected cells, consisting of the liberation of a vasopressor substance, it

is suggested that similar liberation of a vasopressor substance occurs in the anuric crush syndrome, causing arteriolar spasm at the vascular pole of the glomerular tufts.

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Potentiating Effect of Anaphylactic and Histamine Shock upon Herpes Simplex Virus Infection in Rabbits.*

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A rabbit which had been inoculated intramuscularly and again intracerebrally with herpes simplex virus suspension with no apparent infection was, after a period of 6 months, sensitized to egg-white and thrown into anaphylactic shock. On the seventh day following the shock, the first symptoms of herpetic encephalomyelitis appeared. On the ninth day the animal was moribund and was dispatched.

Protocol—Rabbit G 126.

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| 7/30/44 | Inoculated with 1 cc 10% mousebrain suspension of H.F. ₁₂ virus into quadriceps femoris muscle of right leg. |
| 7/31 to 8/28 | Daily temperatures normal. |
| 8/28 | Intracranial inoculation with 0.2 cc 10% suspension of same virus. No illness followed this inoculation. |
| 1/23/45 | 5 cc egg-white injected subcutaneously into right hind leg. |
| 1/25 | 2 cc 10% egg-white in distilled water intravenously. |
| 2/ 6 | 0.75 cc egg-white intravenously; severe anaphylactic shock ensued. |
| 2/ 8 | Animal well. |
| 2/ 9 | No change. |
| 2/10 | No change. |
| 2/13 | Animal depressed RT. 104.9. |
| 2/14 | Rectal temperature 106.2. Severe opisthotomy, grinding of teeth, twitching of facial muscles, excessive salivation, head nystagmus, excitement noted. |
| 2/15 | Condition worse. Animal killed. Autopsy revealed extensive encephalomyelitis with typical herpetic inclusion bodies. |

Trauma, intracerebral injections of irritating solutions, and extensive subcutaneous inflammation have been shown by Le Fèvre de Arric and Millet¹ to increase the susceptibility of rabbits to intravenous inoculation with Herpes simplex virus.

The history of rabbit G 126 and the reports in the literature, cited above, have led us to the following experiments which were designed to test the potentiating effect of shock upon susceptibility to intravenous inoculation with the virus of Herpes simplex. Histamine shock has been substituted for anaphylactic shock.

Experiment I. Six young adult rabbits (2.5-3.0 kg) were inoculated intravenously with 1 cc of the supernatant of a centrifuged 10% infected mouse brain suspension in Locke's solution.[‡] Three of the animals (G 136, 137, 138) had been subjected to severe anaphylactoid shock 10 minutes previously by the intravenous injection of 2.75 mg of histamine diphosphate. The other 3 animals (G 139, 140, 141) were given no other treatment. Of the 3 animals in which

¹ de Fèvre de Arric, and Millet, M., *C. R. Soc. Biol.*, Paris, 1925, **93**, 45; 1926, **94**, 782.

[‡] Bio-assays of these 2 animals revealed virus in the midbrains and spinal cords of each; the livers, kidneys, spleens, and adrenals were negative. The virus which was recovered had, after the second mouse passage, the same m.l.d.₁₀₀ as the original infective dose.

[‡] The Herpes simplex virus used in these experiments was maintained by intracerebral mouse to mouse passage. The m.l.d.₁₀₀ was 0.03 cc of a 1/10000 suspension of the brain.

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the herpetic inoculation was preceded by shock, 2 (G 137, 138) developed severe encephalomyelitis on the seventh day and were killed when moribund. The third, becoming ill on the eighth day, showed less marked but definite signs of encephalitis and none of myelitis. The 3 animals were autopsied and the presence of typical herpetic lesions noted in the brain and in rabbits G 137, 138, in the spinal cord. Bio-assays of the latter 2 animals revealed virus in the midbrains and spinal cords. Of the 3 rabbits inoculated without the preceding shock, none became ill nor showed herpetic lesions at autopsy 21 days later.

Experiment II. Seven young adult rabbits (2.9-3.5 kg) were inoculated with 1 cc of the supernatant from a 10% suspension of infected mouse brain in Locke's solution. Ten to 15 minutes preceding this inoculation, 4 of the animals (G 151, 152, 153, 154) were given a severe anaphylactoid shock by intravenous injection of 2.75 mg histamine diphosphate. By the seventh day, these animals had all shown signs of herpetic encephalitis. At autopsy widespread lesions were

found in the nervous system. Of the 3 animals not shocked previous to the herpetic inoculation (G 148, 149, 150) 2 showed neither signs nor lesions of the disease while one developed a mild encephalitis on the seventh day. At autopsy lesions were found in the midbrain and thalamus of the latter animal.

Discussion and Summary. Intravenous infection of rabbits with neurotropic herpes simplex virus is only occasionally possible according to Le Fèvre de Arric and Millet,¹ Doerr and Vöchtung,² and Van Rooyen and Rhodes.³ This fact is borne out by our control series. The fact that all experimental animals in the series here reported were infected clearly reveals the potentiating effect of histamine shock on susceptibility to the virus. It would seem, from the first animal reported, that the effect is related to a common denominator of histamine and true anaphylactic shock.

² Doerr, R., and Vöchtung, R., *Rev. gén. Ophthal.*, Paris, 1920, **77**, 372.

³ Van Rooyen, C. E., and Rhodes, A. J., *Virus Diseases of Man*, London, 1940.

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Effects of Sulfonamides on Chick Brain Tissue Cultivated *In vitro*.*

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Although it has become an established practice to apply certain sulfonamide compounds to brain exposed by craniotomy or as a result of war wounds, little is known of the effect of these drugs on brain elements. In an effort to establish a basis for comparison of the toxicity of sulfonamides, brain tissue of the chick was cultivated in plasma containing the following

compounds: (1) sulfanilamide, (2) sulfapyridine, (3) sulfathiazole, (4) sulfaguanidine, (5) sulfadiazine, (6) nicotinyl sulfanilamide, (7) sulfapyrazine, (8) succinyl sulfanilamide, (9) succinyl sulfathiazole, (10) sodium sulfapyridine, (11) sodium sulfathiazole, and (12) sodium sulfadiazine.

Methods. In order to avoid the introduction of variables, the procedure of cultivation was reduced to the simplest possible elements. Brain tissue was excised from 8-day old chick embryos and placed in a Petri dish containing Tyrode's solution. The meninges were care-

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