

Experimental Gout from Alloxan in Pigeons. Findings in the Joints and Serous Membranes

In previous articles (SAVIANO and LEONE¹) the changes of the blood uric acid concentration following alloxan administration have been described; our experiments covered a wider range of alloxan concentration and extended over a longer period of time than those of GOLDNER and GOMORI². We were able to confirm, using the uricase method of BLAUCH and KOCH³, the increase of uric acid in the blood after alloxan treatment that had been discovered with the aid of colorimetric methods (it is known that several substances such as glycose, ergothioneine, etc. interfere with the colorimetric determination of uric acid, and one could suspect a variation of their concentration under the experimental conditions). We have also studied the interesting phenomenon of



urate deposition on the serous membranes. GOLDNER and GOMORI (l. c.) described it first, while SCOTT, HARRIS, and CHEN⁴ mention the presence of a "white crystalline substance" on the surface of the serous membranes and kidney, but, as they write, they were not able to identify its chemical nature. In some of our most marked cases we noticed a whitish, rather soft polish spread on the visceral and parietal layers of the pleura, pericardium, and peritoneum. The kidneys appeared dotted with whitish spots, and on their cut surface one could notice several more or less widespread areas of the same whitish, soft substance that covered the serous membranes. This substance appeared under the microscope to be composed of nearly entirely amorphous urates, together with some crystals; after the addition of 5% acetic acid, typical uric acid crystals appeared in bulk, showing a marked birefringence in polarized light. Chemical analysis with BROWN'S⁵ method showed 13.75 mg uric acid in 22 mg of dry substance in a sample of the substance taken from the pericardium and perihepar. Quite re-

producible data were obtained in the pigeon after 200 mg/kg alloxan, provided that the animal survived the first 12 hours (approximately) after the injection. It should be emphasized that the same soft substance noticed on the serous membranes and equally composed of urates (as ascertained through chemical and microscopic observations), is also present on the synovial membrane of the joints (especially of the femur-rotuleo-tibialis articulations), in the periarticular tissues, and sometimes also in the muscles and subcutaneous connective tissue. As far as we know, this fact had never been observed hitherto.

The figure represents an abundant deposit of urates on bones, muscles, and periarticular tissues of the femur-rotuleo-tibialis articulation; it looks like a pattern of articular gout. Its experimental production by means of alloxan is a new interesting finding. The finding of urate deposits in the joints is not as constant as that on the serous membranes.

Experiments carried out in collaboration with LEONE indicate that various animals having an ureotelic proteic metabolism (dog, goat, rat¹, teleosts) show neither markedly increased uric acid concentration in the blood nor articular and visceral gout after alloxan administration.

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Zusammenfassung

Bei Tauben erzeugt intravenös gegebenes Alloxan bekanntlich Läsionen, die denen der Eingeweidegicht ähneln. Chemische und mikroskopische Untersuchungen zeigten eine große Menge von Uraten auf Perikardium, Peritoneum und Pleura. Die große Zunahme der Harnsäure im Blute, die von anderen Autoren kolorimetrisch festgestellt wurde, wird durch die Urikasemethode bestätigt. In der vorliegenden Mitteilung wird weiterhin über ein der Gelenkgicht ähnliches Bild bei alloxanbehandelten Tauben berichtet. Verschiedene Tierarten mit einem «ureotelic-proteic metabolism» zeigen nach Alloxan weder eine nennenswerte Harnsäurezunahme im Blut noch eine Gicht der Eingeweide oder der Gelenke.

¹ M. SAVIANO and E. LEONE, Boll. Soc. ital. Biol. sper. 23, 811, (1947).

Zur Histologie der Lungenveränderungen bei der Valléeschen Krankheit

(Infektiöse Anämie der Pferde)

Die wiederholte Feststellung einer auffallenden Anhäufung kernhaltiger Zellen, hauptsächlich von Makrophagencharakter, in kleinen Lungengefäßen bei Pferden, die wegen der Valléeschen Krankheit (sog. infektiöse Anämie, eine spezifische Viruskrankheit der Pferde) geschlachtet worden waren, veranlaßte uns, ein sorgfältig ausgewähltes Material mit genügend bekannter Vorgeschichte vergleichend zu untersuchen.

Es wurden 31 Lungen von Fällen von Valléescher Krankheit und 7 Lungen von anders erkrankten Pferden mit einer genügenden eigenen klinischen Vorbeobachtung verarbeitet.

Dabei wurde in den Kapillaren und andern kleinen Gefäßen der Lunge Vergrößerung und Wucherung der

¹ M. SAVIANO and E. LEONE, Boll. Soc. ital. Biol. sper. 22, 1241 (1946).

² M. G. GOLDNER and G. GOMORI, Proc. Soc. exp. Biol. Med. 58, 31 (1945).

³ M. B. BLAUCH and F. C. KOCH, J. biol. Chem. 130, 443 (1939).

⁴ C. C. SCOTT, P. N. HARRIS, and K. K. CHEN, Endocrinology 37, 201 (1945).

⁵ H. BROWN, J. biol. Chem. 158, 601 (1945).