

CHANGES IN THE SIALIC ACID LEVEL
IN THE BLOOD SERUM OF GUINEA PIGS AND RABBITS
WITH EXPERIMENTAL TUBERCULOSIS

V. M. Stratonov

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Several investigations have been made of the changes in the sialic acid level in the blood serum of patients with tuberculosis. It has been found [1,3-5,7] that an increase in the serum sialic acid level is a more accurate test than the ESR and the leukocyte count for estimating not only the activity of the specific process in the lungs, but also the periods of its quiescence. It is considered [2] that an increased sialic acid level in the blood serum is a more accurate criterion of the activity of the tuberculous process than the character of the proteinogram and the ESR. The same authors claim that determination of the sialic acid concentration before and after Koch's test extends the diagnostic scope of this test.

In contrast to most of the findings, it has been reported [6] that an increased serum sialic acid concentration is not found in tuberculosis. When the clinical findings indicating an increased concentration of sialic acid in the serum in active tuberculosis are assessed, it must be remembered that prolonged antibacterial therapy may have a definite effect on the sialic acid concentration.

In the present investigation, the sialic acid concentration was investigated in guinea pigs and rabbits with experimental tuberculosis.

EXPERIMENTAL METHOD

The sialic acid concentration in the blood serum of the experimental animals was determined photometrically by the method of Hess and co-workers [6]. The results were expressed in units of optical density.

Experiments were carried out on 20 rabbits weighing 2.5-3.0 kg and 28 guinea pigs (of which 8 were controls). The rabbits were infected with tuberculosis by injection of 0.1 mg of a Vallée culture into the marginal vein of the ear. The sialic acid concentration in the serum was determined 16-40 days after infection.

The guinea pigs were infected subcutaneously in the thigh with a Vallée culture (0.2 mg). The first measurement of the sialic acid concentration in the serum of blood taken from the heart was made 15 days later (on the appearance of enlarged regional lymph glands) and the second 35 days later.

The numerical results were subjected to statistical analysis.

EXPERIMENTAL RESULTS

Before the rabbits were infected, their sialic acid level was 0.156 ± 0.006 , 16 days after infection it was 0.184 ± 0.008 ($P < 0.001$), and 40 days after infection (when one rabbit developed signs of a worsening of its general condition) it was 0.226 ± 0.006 ($P < 0.001$).

In the rabbits which died, hematogenous disseminated tuberculosis was found at autopsy, with lesions in the lungs, spleen, and liver. The diagnosis of tuberculosis in all the rabbits was confirmed microscopically and by the seeding method.

The sialic acid concentration in the control guinea pigs was 0.182 ± 0.005 (at the second determination 0.181 ± 0.002). In the group of experimental animals, the sialic acid level rose 15 days after infection to 0.234 ± 0.008 ($P < 0.001$), and 35 days after infection to 0.302 ± 0.008 ($P < 0.001$). All the guinea pigs died from hematogenous disseminated tuberculosis, with lesions in the spleen, the liver, and the lungs. The postmortem diagnosis was confirmed by films and seedings.

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Hence, in experimental tuberculosis of guinea pigs and rabbits, the serum sialic acid concentration was raised. As the specific process progressed, the serum sialic acid concentration of the animals continued to rise.

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All abbreviations of periodicals in the above bibliography are letter-by-letter transliterations of the abbreviations as given in the original Russian journal. *Some or all of this periodical literature may well be available in English translation.* A complete list of the cover-to-cover English translations appears at the back of the first issue of this year.
