1. Hall, W. H., Spink, W. W., PROC. SOC. EXP. BIOL. AND MED., 1947, v64, 403.

2. Huddleson, I. F., Baltzer, B., p64 in *Studies in Brucellosis, III,* Mich. State College Agr. Exp. Station, Lansing, 1952.

3. Pickett, M. J., Nelson, E. L., *J. Bact.,* 1951, v61, 229.

4. Wise, R. I., Spink, W. W., *J. Clin. Invest.,* 1954, v33, 1611.

5. Huddleson, I. F., *Brucellosis in Man and Animals,* Commonwealth Fund, New York, 1939.

6. Waisbren, B. A., Carr, C., Dunnette, J., *Am. J. Clin. Path.,* 1951, v21, 884.

7. Spink, W. W., McCullough, N. B., Hutchings, L. M., Mingle, C. K., *ibid.,* 1954, v24, 496.

8. Szybalski, W., *Antibiot. and Chemotherap.,* 1952, v3, 915.

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Influence of Cortisone on Infection in Mice Caused by Strain 19 *Brucella abortus.* (24386)

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When mice were pretreated with cortisone and then infected with a smooth culture of *Brucella suis,* a fulminating brucella infection resulted(1). Hepatic abscesses teeming with brucellae were observed in the cortisone-treated mice, in marked contrast to occasional granulomatous lesions seen in saline-treated control mice. Since cortisone intensified brucella infection due to an invasive strain of brucella, it was important to determine if the steroid accelerated infection due to a brucella strain with attenuated virulence. Strain 19, *Brucella abortus* is a stable, smooth dissociant of *Br. abortus,* widely used for immunizing cattle against brucellosis. This strain does not require additional CO_2 for growth. It is doubtful whether a persistent infection can be established in animals with this strain. There is no evidence that infection with strain 19 has been transmitted from animal to animal or that man has acquired the disease from animals immunized with the vaccine. However, there are several well documented cases of human brucellosis caused by strain 19, in which man became accidentally infected while immunizing cattle(2).

Materials and methods. Adult white male ABC mice weighing approximately 20 g were used. Twenty mice were injected daily subcutaneously with 0.2 ml saline, and 20 mice were injected daily for 13 days with 0.5 mg of cortisone acetate. Each of these 2 groups were injected intraperitoneally on the third day of the foregoing treatment with 10 million organisms of strain 19 *Br. abortus.* Ten uninfected control mice were treated daily with 0.5 cortisone for 13 days. The 2 groups of infected mice were sacrificed 7, 15 and 21 days after infection. The titer of brucella agglutinins was determined on heart blood. Liver, spleen, and kidney of each mouse were examined grossly, and quantitative brucella cultures of the emulsified organs were made on Albimi brucella agar.* Sections of liver were stained with hematoxylin and eosin and examined microscopically.

Results. Saline-treated infected mice appeared healthy throughout period of observation, whereas cortisone-treated infected and uninfected mice lost weight. Serological and bacteriological studies on the saline-treated and cortisone-treated groups of infected mice are presented in Table I. Cortisone did not interfere with formation of brucella agglutinins, the titers being approximately the same in the 2 groups. There was a significantly greater number of brucella colonies in the organs of the cortisone-treated mice. In contrast with previous studies on effects of cortisone on tissues invaded by the more virulent species of Brucella, there was no outstanding difference between saline-treated and cortisone-treated mice infected with strain 19. Seven days after infection the saline-treated group showed a large number of well-defined

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TABLE I. Serological and Bacteriological Studies on Mice Infected with Strain 19, *Brucella abortus* and Treated with Saline or Cortisone.

No. mice & days after infection sacrificed	Saline-treated				Cortisone-treated			
	Reciprocal of brucella agglutinins (avg)	Avg No. of brucella colonies per 0.1 mg of organ*			Reciprocal of brucella agglutinins (avg)	Avg No. of brucella colonies per 0.1 mg of organ*		
		Liver	Spleen	Kidney		Liver	Spleen	Kidney
5 in each group in 7 days	320	2+ to 3+	4+	3+ to 4+	640	3+ to 4+	4+	
5 in each group in 15 days	1280	40 (1 neg.)	2,500	175 (2 neg.)	1280	2,550	5,500	4,800 (1 neg.)
10 saline & 8 cortisone, 21 days	1280	39 (1 neg.)	2,950	62 (3 neg.)	640	189 (1 neg.)	10,900	294 (1 neg.)

* 2+ = more than 5,000 colonies; 3+ = more than 50,000 colonies; 4+ = solid growth of brucellae.

hepatic granulomas. Fewer granulomas were apparent in livers of the cortisone-treated mice, and they were less well defined. Fifteen days after infection, cellular infiltration in the 2 groups was approximately the same, except that the saline-treated group had more organized granulomas in the liver. After 3 weeks well organized granulomas were noted in livers of both groups of mice, but the number of granulomas in the cortisone-treated group was slightly greater than in the saline-treated mice. In general, the granulomatous tissue reaction of the saline-treated group of infected mice was more uniform than in the cortisone-treated mice. No granulomas were seen in the cortisone-treated, non-infected control mice, but a few areas of cellular infiltration were observed.

Summary and conclusions. An acute infection with strain 19, *Br. abortus* was established in mice. Simultaneous treatment with cortisone enhanced the infection, but did not interfere with the formation of brucella agglutinins. However, cortisone did not cause the severe necrosis of the hepatic parenchyma and proliferation of brucellae that had been previously observed in studies with a more virulent species of Brucella.

1. Abernathy, R., Spink, W. W., *J. Clin. Invest.*, 1952, v31, 947.

2. Spink, W. W., *Ann. Int. Med.*, 1957, v47, 861.

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Evidence for Existence of Mammogenic Hormone.*† (24387)

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For over 20 years it has been known(1) that the anterior pituitary gland is necessary and directly or indirectly responsible for mammary gland lobule-alveolar growth. Whether a specific mammogenic (mammary gland growth promoting) hormone is secreted by the anterior pituitary has not been answered conclusively(2,3). Much disagreement has stemmed from the fact that mammogenic activity has been found to be associated with those extracts of pituitary tissue containing high lactogenic activity. Comparisons of lactogenic and mammogenic potencies of various preparations(5) indicated extreme differences in relative amounts of these hormones. However, these assays were based on older, more subjective technics(4,5) which had no method of estimating variance of assayed potency. If definite, significant differences were shown between lactogen/mammogen ratios of several anterior pituitary preparations it would appear that mammary gland growth is not due

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