

ABSTRACTS



THE EFFECTS OF LARGE DOSES OF VARIOUS SULFONAMIDES INJECTED INTRAVENOUSLY IN DAIRY CATTLE. Eighteen mature dairy cows of mixed breeds were injected intravenously with large, single doses of various sulfonamides to determine their tolerance to these drugs. The cows were divided into six groups to be treated as separate units to study the effects of only one drug. One animal of each group received 60 Gm. of the respective sulfonamide. Another member of each group received a second injection of 60 Gm. in 7 to 10 days. The third cow in each group was given two injections of 60 Gm. and two of 90 Gm. All animals were slaughtered within five days after their last injection. Numerous blood samples were drawn at scheduled intervals to determine blood-sulfonamide concentration, the blood cell and hemoglobin picture, and the blood urea-nitrogen concentration. Slaughtered animals were autopsied carefully with a detailed study being made of the entire urinary tract and liver.

Sufamethazine sodium produced a transient "drug shock" in one cow after 48 Gm. had been injected intravenously. No shock was noted on subsequent injections. Sulfaquinoxaline sodium produced severe drug shock in three cows after 60 Gm. were injected. One cow did not recover. A later injection of 48 Gm. again caused drug shock. After the fourth injection of sulfapyridine sodium, one cow died, showing failure of the normal blood-clotting mechanisms and a progressive decrease in red blood cells

and hemoglobin. No significant variations in body temperature were noted following the administration of the drugs. Only about 76 percent of the total amount of sulfaquinoxaline present in a sample of ox blood is accounted for by the standard method of Bratton and Marshall for sulfonamide analysis. Sulfaquinoxaline temporarily prolonged the bloodclotting time by two times or more of normal. Blood-urea nitrogen analyses did not reveal levels widely divergent from the normal range, during and after the administration of sulfonamides intravenously. After 60 Gm. doses, the drugs disappeared from the blood stream in the following order: sulfathiazole, sulfaquinoxaline, sulfadiazine, sulfamerazine, sulfapyridine and sulfamethazine. After 90 Gm. doses, the order of disappearance was the same except that sulfapyridine lasted as long as did sulfamethazine. After injecting 60 Gm. doses of the above sulfonamides intravenously, concentration of more than 5 mg. per 100 cc. of blood were maintained for 5 to 29 hours, respectively, and concentrations of more than 2 mg. for 8 to 44 hours, respectively. After injecting 90 Gm. doses of the above sulfonamides intravenously, concentrations of more than 5 mg. per 100 cc. of blood were maintained for 8 to 33 hours, respectively, and concentrations of more than 2 mg. for 15 to 46 hours, respectively. Precipitated sulfonamide crystals were found in the kidneys of two of the three cows that received sulfaquinoxaline. Microscopically, kidneys from all the cows showed acute passive congestion of the medullary venules; one-third

showed albuminous casts; and one-half showed partial loss of the cytoplasm of the tubular epithelium. Microscopically, all the liver sections showed cloudy swelling and albuminous degeneration, sometimes with an advancing necrosis of hepatic epithelium and sometimes accompanied by intracellular fat. Death of one cow appeared due to some toxic effect of sulfapyridine upon the normal blood-clotting mechanism and perhaps upon the fragility of the capillaries. Death of a cow which received 60 Gm. of sulfquinoline probably resulted from the extensive myelin degeneration of the tissues of the central nervous system, as shown by the first lumbar section of the spinal cord. Certainly, the paralysis of the legs could be explained by the myelin degeneration observed in the sciatic and median nerves.

[Jones, L. Meyer, Smith, Hilton A., Roepke, Martin H. The effects of large doses of various sulfonamides injected intravenously in dairy cattle. *Am. J. Vet. Res.*, 37: 318-326. (Oct.) 1949.]

SPEROVULATION AND OVUM TRANSFER IN CATTLE. Large numbers of ovarian follicles are stimulated by the implantation of wax pellets, containing about 1,500 r.u. of pituitary gonadotropin followed, in three to four days, by an intravenous injection of gonadotropin. This led to the ripening of numerous follicles to the ovulation stage. It was found that such multiple follicle stimulation was best achieved when the pellet implantation was done shortly after the removal of an active corpus luteum.

The technique for collecting ova from the follicle is described. Superovulation occurs from such follicles beginning 24 hours after the intravenous injection of gonadotropin and continues for several hours. After fertilizing the ripe ova with semen in vitro they were transferred to recipient cows; no calves were obtained. Further attempts to transfer ova to the Fallopian tubes of inseminated cows gave no calves.

An average of 23.4 ovulation points per cow was obtained by the use of pellet implantation of pituitary extract followed by intravenous injection of gonadotropin. In a series of artificially inseminated animals slaughtered three to six days following the intravenous injection, an average of 110.4 ova were collected from the oviduct. Of these, an average of 5.4 per cow were fertilized.

Methods are described for collecting "superovulated ova" from the Fallopian tubes and uteri of living sperm-inseminated cows. Twenty eight percent of the ova ovulated were recovered. Cleaved ova averaged 1.3 per heifer. Attempts to increase the percentage of fertilized ova in similar cows by using chorionic gonadotropin with estrogen or progesterone were unsuccessful.

[Umbaugh, Raymond E. Superovulation and ovum transfer in cattle. *Am. J. Vet. Res.* 37:295-305 (Oct.) 1949.]

CLINICAL DIAGNOSIS OF INFECTIOUS CANINE HEPATITIS AND THE USE OF FOX ENCEPHALITIS ANTISERUM. Infectious canine hepatitis is a recently recognized virus infection of dogs. Rubarth, in Sweden, first reported the disease in 1946, and isolated the filterable virus which is the causative agent. Since then, it has been reported from many sections of this country, England and Sweden.

Concurrently with the discovery of canine hepatitis, the Fromm Laboratories discovered a virus causing encephalitis among foxes. An antiserum to this fox encephalitis virus was produced and marketed. It was soon discovered that the virus causing canine hepatitis and the virus causing encephalitis among foxes were either identical or closely related. Fox encephalitis antiserum has proved of value in treating experimental canine hepatitis, but the difficulty of diagnosing the clinical disease still complicates its control.

Two syndromes are recognized which depend on the rate and extent of liver

destruction, (1) acute liver insufficiency, and (2) subacute hepatitis.

The first is a spectacular disease beginning with vomiting and mild-depression and quickly progressing, often in two to five hours, into an alarming depression and coma. Death quickly ensues unless proper treatment is given. Little gross pathology is visible on necropsy, but histologic examination reveals almost complete destruction of the liver parenchyma.

Subacute hepatitis occurs when enough hepatic tissue remains functional to support vital processes. Symptoms most often noted are vomiting, tonsillitis and a temperature of 104° to 106° F. Symptoms continue for a week or two, and often terminate in death. Some dogs recover uneventfully, or with jaundice..

The author has treated only one case of acute liver insufficiency because of its rapid termination in death. A Cocker spaniel in the comatose stage of the disease was given dextrose intravenously to relieve the hypoglycemia which accompanies the hepatitis. This brought the dog out of the coma in a very short time. Fox encephalitis antiserum was then given to combat the virus. No further symptoms were noted. The dog was seen three months later and has had no recurrence of symptoms.

The author used fox encephalitis antiserum in 20 cases which were diagnosed as subacute hepatitis, and in all cases marked improvement was noted in 12 to 24 hours with rapid and complete recovery.

Diagnosis of acute liver insufficiency is not difficult, but most cases die before the owner realizes the dog is sick. Subacute hepatitis is more difficult to diagnose because of the vague and varied symptomatology.

The author feels that fox encephalitis antiserum is of definite advantage in treating canine hepatitis, but that accurate diagnosis is difficult.

[Craize, John E. Clinical diagnosis of infectious canine hepatitis and the use of fox encephalitis antiserum. *Veterinary Medicine* 45:81. (February) 1950].

EFFECTS OF MANAGEMENT AND THERAPY ON STAPHYLOCOCCIC MAMMARY INFECTIONS.

This is a summary of data, relative to staphylococic mammary infections. The data was gathered from 1945 through 1948 on a herd of both purebred and grade Holstein-Friesian cows owned by one of the California state mental hospitals. A discussion of methods including herd management, bacteriological procedures, frequency of sampling, criterion of infection, therapy, and criterion for cure was followed by data and results and a discussion of the techniques employed.

In this herd, mammary gland irritation in the presence of infection with *Staphylococcus pyogenes* (the names *Staphylococcus pyogenes* var. *aureus* or *albus* were not used in this paper because a critical study of the chromogenesis of the cultures was not made) was usually mild in comparison with the irritation resulting from infections which had also existed in the herd. Complete segregation of *Staphylococcus pyogenes*-infected cows from noninfected animals led to a reduction of spread among clean animals. This observation points to the milking act as an important factor in the spread of this infection. The staphylococic infections respond to penicillin more favorably in dry quarters than in lactating quarters, and long-standing infections were found difficult to cure. It was shown that penicillin resistance of *Staphylococcus pyogenes* strains plays, at best, a minor role in failure of cure. Certain facts point to localization of staphylococci within the tissues as a more tenable explanation of numerous failures to cure the infection in lactating quarters and in long standing infections. Penicillin therapy of *Staphylococcus pyogenes* mammary infection in lactating quarters did not produce a sufficiently high level of cures to merit its continued use in the program, except for the treatment of quarters in which gross symptoms of mastitis appeared. In such cases, the symptoms usually subsided, at least temporarily, following penicillin administration; but the infection usually persisted. The major progress with therapy was

made by treating during the dry period. Optimum results were obtained in infected dry quarters with a total of 200,000 O.U. of penicillin given either in two equal infusions administered 48 hours apart or in four equal infusions administered at 24 hour intervals.

[Schalm, O. W., and Ormsbee, R. W. Effects of management and therapy on staphylococcal mammary infections. J.A.V.M.A. 115:464-473. (Dec.) 1949.]

Aid to Formosa

American aid to Formosa, especially its support of rent reductions for tenant farmers and its fertilizer supply program, has helped keep the political and economic situation on the island from deteriorating badly in the face of Communist success on the Chinese mainland.

This opinion was voiced by Raymond T. Moyer, chief representative of the Economic Cooperation Administration on the island and also a member of the Chinese-American Joint Commission for

Rural Reconstruction (JCRR) which is sponsored and financed by ECA.

"Another project of direct benefit to Formosan farmers," said Moyer, "is the control of hog cholera and cattle rinderpest diseases. With the assistance of local currency funds supplied by the JCRR, 309,958 cc. of vaccine have already been produced, sufficient for the vaccination of 61,992 head of swine. The distribution of this vaccine has lagged behind its manufacture but this problem is now nearly solved."

He said that through the efforts of JCRR, working with the Formosan Provincial Commission of Agriculture and Forestry, rinderpest had been stamped out in two places on the island where it had broken out and threatened to spread. Rinderpest attacks the water buffalo which is the farmer's most valuable economic asset. Not having previously been present on the island, this disease threatened widespread loss of work animals with serious consequences to the island's agriculture.

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