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ASCORBIC ACID in Treatment of the Canine Distemper Complex

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A CLINICAL investigation of ascorbic acid as a therapeutic agent in treatment of canine distemper complex was initiated in the author's practice early in 1967. This move was prompted by reading a report that vitamin C had been used clinically, with notable success, in treating 12 cases of distemper complex (canine and feline) in one practice.[1]

Ten years of practice had led me to view skeptically all reports of the type cited. However, experience during those same years had made me aware that the recovery rate among my patients showing signs of CNS disturbance, and treated with the generally accepted therapeutic regimen, was a dismal 5% to 10%. With many of these patients, the prognosis appeared to be hopeless from the first examination. Many others progressed rapidly from showing signs of the distemper complex to a state of chorea followed by death.

With this background in mind, intravenous injection of ascorbic acid (250 mg./cc.), Scorbate® Injection (Burns Pharmaceuticals) was added to the course of treatment given for canine distemper in our practice.

About a year after the investigation was started, John E. Reinert, M.D., a local neurologist and neurosurgeon, became interested in the work and thereafter was associated with the study. Dr. Reinert examined many of the dogs for neurologic impairment and observed their progress after treatment. After assessing the results in dogs, he began using ascorbic acid to

treat some of his own patients, with favorable results.

During the 22 months before this paper was prepared, 67 dogs in which canine distemper had been diagnosed were treated with ascorbic acid and a running summary of their histories was kept.* The following case histories are typical examples.

Case Histories

Case No. 1

This 2-year-old male Miniature Poodle with typical signs of distemper had been under treatment for 10 days. On the eleventh day, convulsions began to occur almost continuously. Within 24 hours, the animal was semicomatose, unable to stand, and stricken with chomping and foaming seizures. During the next five days, while the dog remained in the same condition and failed to respond to treatment, the owner refused permission for euthanasia to be performed.

On the morning of the sixth day following the onset of convulsions, 1,500 mg. of ascorbic acid was given intravenously. Late that afternoon, although mildly incoordinated, the dog was standing, walking in the cage and drinking water.

By the following morning, there were no signs of incoordination and the temperature had dropped from 103 F. to 101.8 F. After a second 1,500-mg. dose of ascorbic acid was injected, the condition continued to improve. The dog drank water and ate several meals of solid food during the day. A third dose of 1,500 mg. ascorbic acid was given the next day, although by that time no signs of distemper were present.

Five days after the beginning of treatment with ascorbic acid, the dog was discharged. Weekly checkups for the next three weeks indicated a complete return to clinical normalcy. When last examined, one and a half years later, the patient was physically sound and in apparent good health.

Case No. 22

A 2½-year-old male Shetland Sheepdog had been treated elsewhere for one month. Throughout that time, this dog's temperature had remained within a range of 103 F. to 104 F. The general condition of the animal upon presentation at our hospital was classified as poor.

In addition to our standard treatment for distemper, a 2,000-mg. intravenous dose of ascorbic acid was given daily for three days. By the second day, the temperature had dropped to 102 F. from 104 F.; on the third day it was 101.6 F.

The patient was discharged on the fifth day. Recovery was uneventful.

Case No. 43

Clinical signs in this 9-month-old male Poodle were convulsions, tremors over the entire body, incoordination, and a temperature of 106.4 F.

Treatment was immediately started with 2,000 mg. ascorbic acid in conjunction with Dilantin® Suspension (Parke-Davis), Sparine® (Wyeth), atropine, and phenobarbital. Within 24 hours, the convulsions had ceased. The temperature was 101 F., and it remained normal throughout the rest of the treatment period.

By the third day, the tremors had disappeared and all medication but ascorbic acid was discontinued. After the fifth day of treatment with ascorbic acid, the patient was discharged, giving every indication of being completely normal.

Case No. 65

When presented, this 2½-year-old male Poodle had been exhibiting signs of hardpad distemper for six weeks. A slight posterior paralysis and mild incoordination were present. The temperature was 103.6 F.

After two daily doses of 2,000 mg. as-

*A tabular summary showing clinical signs, daily temperatures, dosages of ascorbic acid, adjunctive therapy and results for each patient, is available upon request to the editors.

TABLE 1: Recovery Rates among Dogs Treated with Ascorbic Acid* for Canine Distemper Complex

Patient Group	No. Treated	No. Recovered	Recovery Rate
All dogs treated	67	48	71.64%
Cases showing CNS disturbance	16	7	43.75%
Atypical cases with CNS disturbance but no convulsions	4	3	75.00%
Typical cases with convulsions	12	4	33.33%
Cases without CNS disturbance	51	41	80.39%
Typical cases with convulsions and given 3 or fewer doses of ascorbic acid	7	1	14.29%
Typical cases with convulsions and given more than 3 doses of ascorbic acid	5	3	60.00%
Typical cases without convulsions and given more than 3 doses of ascorbic acid	14	11	78.57%

*Scorbate® Injection (Burns Pharmaceuticals)

TABLE 2: Dogs Given Massive Doses of Ascorbic Acid over a Three-Day Period

Breed	Sex	Age	Weight	Total Dose*
Poodle—X	M	1 Yr.	16.5 Lb.	45,000 mg.
Terrier—X	F	8 Mo.	13 Lb.	45,000 mg.
Shepherd—X	F	4 Mo.	25 Lb.	45,000 mg.

*5,000 mg. ascorbic acid, Scorbate® Injection (Burns Pharmaceuticals) given intravenously three times a day for three days

corbic acid, the temperature was reduced to 101.4 F. After four more days of treatment with ascorbic acid, the patient was discharged.

Two and a half weeks later, the owner requested euthanasia because of a recurrence of the paresis and incoordination which were becoming progressively worse.

Discussion

RECOVERY RATES observed during the investigation are shown in Table 1. As might be expected, treatment beginning at the onset of clinical signs gave more favorable results than treatment delayed until the condition was in an advanced stage. Although relatively few animals exhibited convulsions in conjunction with the typical signs of distemper, the recovery rate for those in this group that were given more than three doses of ascorbic acid was much higher than that for those given fewer doses (60% as compared to 14%).

Temperatures were elevated in most of the 67 dogs at the time of the first examination, but in almost all cases were within normal limits at 24 or 48 hours after treatment was started. During the latter part of the investigation, when hourly temperature charts were kept, many temperatures were found to be normal within 2 to 6 hours

after the first injection of ascorbic acid.

In all instances, the ascorbic acid was administered intravenously at a rapid rate. Some drowsiness, which lasted only a few minutes, was seen in 2 dogs immediately after injection of the vitamin. However, there were no other visible side effects and no toxicity attributable to treatment. To help establish dosage and determine the possible consequence of giving large doses of ascorbic acid, 3 dogs were obtained from a shelter and given 5,000 mg. ascorbic acid three times daily for three days *(Table 2)*. No side effects were seen in any of these dogs. All three were placed in homes, and are doing well to date.

Conclusion

FROM THE results observed in 67 clinical cases of canine distemper complex, it appears that a daily dose of 1,000 mg. to 2,500 mg. of ascorbic acid given intravenously for at least three days is beneficial in the treatment of canine distemper, and that the recovery rate can be markedly improved by including ascorbic acid in the treatment regimen.

During this investigation, ascorbic acid produced a rapid drop in temperature. The recovery rate during a 22-month period was 71.64%. When more than three doses were given, the rate rose to 78.57% for dogs that did not have convulsions. When more than three doses were given to dogs that exhibited convulsions, the recovery rate rose from 14.29% to 60%.

Fully recognizing that this investigation did not constitute a controlled study, but encouraged by the results, the author has presented these observations in the hope that they will be of help to other practitioners and perhaps stimulate additional work in this area. Certainly, more basic research is needed to define the mechanisms involved and to validate the observations reported here.

REFERENCE

1. Belfield, W.O.: Vitamin C in Treatment of Canine and Feline Distemper Complex. *VM/SAC 62:* 345-348; April 1967.