

The author cites reports in the medical literature that vitamin C injections are an effective treatment for measles and mumps and that injections of 3 to 7 grams of vitamin C daily for 1 to 2 weeks following blood transfusions drastically reduced transfusion hepatitis. In the research reported on, guinea pigs were inoculated intramuscularly with an emulsion of rabbit brain containing infectious rabies virus. Control animals got saline and the experimental animals got twice-daily injections of vitamin C. Death rates for the vitamin C group were 35 percent compared to 70 percent for the control animals. Lower doses of vitamin C were less effective; the optimal doses need to be determined, the authors say. —*R.D.M.*

Prevention of Rabies by Vitamin C

S. Banic, Institute of Microbiology, Medical Faculty, Yugoslavia
Nature, November 13, 1975, Vol. 258, pp. 153-154

Murata¹ reported on the virucidal activity of vitamin C and stated that vitamin C prevents various virus diseases. Clinical trials by F. Morishige (unpublished) showed that the incidence of transfusion hepatitis was decreased drastically when vitamin C was injected (3-7 g d⁻¹) for 1-2 weeks after blood transfusion, and Murata has pointed out that vitamin C is effective in the therapy of measles and mumps¹. I have now found that it also helps to prevent rabies.

Guinea pigs, fixed rabies virus and vitamin C (Lek, Ljubljana) were used in the experiments. Five groups of ten test animals and ten control animals were inoculated intramuscularly with 1 ml of a 10% emulsion of rabbit brain containing LD₅₀-LD₉₀ of the infectious fixed rabies virus. Treatment of the test animals was initiated 6 h after inoculation, and vitamin C was injected intramuscularly twice a day for 7 d; each dose contained 100 mg per kg body weight. Control animals were injected with saline. The animals were observed for 14 d. Most of those that succumbed to the inoculation became paralysed on the sixth or seventh day. Some became paralysed on the fifth day, and a few others not until the eighth or tenth day.

The frequencies of deaths from rabies in the five groups treated with vitamin C were: 5/10, 2/9, 6/9, 1/10, 3/10. Of the control animals, however, 9/10, 6/10, 9/10, 6/10 and, 5/10 died (Table 1). Thus 17/48 (35.42%) of the treated animals and 35/50 (70%) of the controls died of rabies. The χ^2 value for these frequencies is 11.107, so that the difference between the treated and control groups is statistically significant ($P > 0.01$). My results therefore justify the conclusion that vitamin C is effective in rabies prevention. It had no therapeutic effect, however, for in animals which developed paralysis, continued treatment was always ineffective.

In preliminary experiments, not reported here, lower doses of vitamin C (25 and 50 mg kg⁻¹) were tried in a small group of guinea pigs. These doses were less effective

TABLE 1

Frequencies of deaths in guinea pigs inoculated with fixed rabies virus and treated with vitamin C and in the control animals.

Treatment	Deaths	Survivors	Σf
With vitamin C	17	31	48
Controls	35	15	50
Σf	52	46	98

than the high dose used in the reported experiments. To establish the optimal dose of vitamin C, however, exact dose-response experiments will have to be done on sufficiently large groups of animals.

To exclude the possibility that rabbit brain itself contributed in any way towards paralysis and mortality of guinea pigs, another group of 30 guinea pigs was inoculated with 1 ml of a 10% emulsion of rabbit brain which was free of virus. All animals survived an observation period of 14 d without any signs of disease.

REFERENCES

1. Murata, A., Abstr. *1st Intersectional Congr. Int. Ass. Microbiol. Soc., Tokyo* (edit. by Science Council of Japan, 1974).