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## LETTER TO THE EDITOR

### Myocarditis in Young Dogs Associated with a Parvovirus-like Agent

DEAR SIR:

During the months of September to November 1978, we encountered a previously unrecognized fatal disease of young pups in the 4 to 6 week age range. A total of 25 previously healthy pups among 31 in six litters from Saskatchewan, Alberta and the Northwest Territories died suddenly, usually without a history or clinical evidence of disease. Slight depression occurred for less than a day in a few cases, and several became distressed and were heard to cry out immediately before being found dead.

At necropsy, the major gross lesion found in all cases was pulmonary edema, which, in several instances, led to a suspicion of interstitial pneumonia, but on histological examination, the pulmonary change could be attributed to edema resulting from cardiac failure.

The outstanding microscopic lesion involved the ventricular myocardium, in which widespread, focally-intense, nonsuppurative inflammation was consistently found, although the degree of mononuclear inflammatory infiltration was variable. Intranuclear inclusion bodies of variable density were recognizable within cardiac myofibers in each of the eleven pups necropsied, but in several they were infrequent and not present in every section. However, in the most severely affected cases, several inclusions were usually evident in each high magnification microscopic field. The most dense inclusion bodies were purple on hematoxylin and eosin stained sections, and were surrounded by a narrow, clear space within the nuclear envelope,

but other inclusions were less densely stained and completely filled the nuclei. Inclusion bodies were not found in other tissues of affected pups.

On ultrastructural examination, inclusion bodies contained large numbers of small regular particles which closely resembled parvoviruses, having both empty capsids and complete virions and being of similar size (approximately 20 nm).

No bacterial pathogens were cultured, and no cytopathic agents were isolated in canine kidney cell cultures from various tissues, including myocardium. Microscopic lesions, as described in parvoviral enteritis, were not evident in any of these cases.

Parvoviruses have not been recorded as a cause of myocarditis in dogs, so the recent recognition of these cases in pups, at a time when canine parvoviral enteritis has also been recognized in Canada (1), is of particular interest. We are presently attempting to isolate and identify the parvovirus-like agent observed in this disease.

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