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VACCINE SITE ASSOCIATED SARCOMAS

"THE VANCOUVER EXPERIENCE"

Observation is the initiator of scientific research. The linkage of vaccine site associated sarcomas to vaccinations is a recent observation that is gaining momentum. Observations are intended to supply a starting point for questions and identify a pathway to pursue. With this in mind I would like to present our experience with vaccine site associated sarcomas.

Central Laboratory for Veterinarians is a cooperative venture that provides clinical and anatomic pathology support to veterinary practices in Alberta and British Columbia, Canada. The laboratory began operations in 1982. In 1991 literature reports associating vaccinations with tumors in cats prompted numerous discussions with veterinarians. The reports suggested a linkage with Rabies and FeLV vaccines. One practitioner in our area was particularly insistent that he was seeing these interscapular sarcomas, but used no FeLV vaccines and rabies vaccines were given only in thigh muscles. The practice had used only one vaccine product for both routine feline vaccines and rabies since 1981. All routine prophylactic vaccinations for panleukopenia and respiratory viruses were given in the interscapular area and this site was used for no other injections.

To further evaluate these sarcomas, all the laboratory records for soft tissue sarcomas were reviewed. This endeavor confirmed

not only this practitioners' observations but also demonstrated that there was an increasing incidence of site associated sarcomas. Discussions with other practitioners and the local drug supply cooperative, confirmed that the primary vaccines used within this geographic area were killed products. These products began gaining in popularity in the 1980's and from 1992-1994 accounted for almost 92% of all feline vaccine sales.

During this same interval the numbers of site associated sarcomas diagnosed on histopathology increased from 5 in 1981 to 92 in 1993.[see table] All soft tissue sarcomas in cats were reviewed to determine if there was a specific histopathologic pattern that could be associated with these tumors and to confirm the original diagnoses. It was hoped since some of the soft tissue tumors did not have information regarding sites, that there would be a consistent pattern apparent on the histopathology evaluation. Unfortunately, although the site associated tumors tended to have mononuclear inflammatory cell infiltrates, cellular pleomorphism, central cavities and amorphous material, similar findings were apparent in some sarcomas from the head and distal extremities.

An attempt was made to relate the type of vaccine used by clinics to the numbers of site associated sarcomas. The association was strongest with the original clinic of this study. This hospital had 18 site associated sarcomas between 1981 and 1993, with 17 located in the interscapular area. There were detailed clinical records available on 14 cases. Five of the fourteen cases were still alive in 1993. This clinic changed

vaccines in May of 1993 and there has been no further interscapular sarcomas. One sarcoma was diagnosed in thigh muscle in April, 1996.

All clinics which had multiple cases of site associated sarcomas used similar killed vaccine products. However, some clinics using these products did not have site associated sarcomas. Continued evaluation of records since May, 1993 revealed many of the clinics which previously did not have site associated sarcomas were now submitting these tumors. There is an apparent increasing incidence that is related to the length of time the killed product is used. Although occasional cases occur randomly there appears to be a lag time of at least 4 years before clusters of site associated sarcomas start appearing. Conversely, four clinics which had multiple site associated sarcomas prior to May, 1993 and changed to modified live vaccines, had no further site associated tumors.

In 1995, the percentage of killed vaccine sales had declined to 86%. The total numbers of site associated sarcomas identified at the laboratory increased in 1994 to 101, but declined in 1995 to 76. It is still too early to determine if this is a persistent trend. It is possible that the decline in the number of tumors is a reflection of increasing awareness of the nodules occurring at the vaccine sites and their subsequent removal before sarcoma development.

References:

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FIBROSARCOMA STUDY

| | DORSAL | THIGH | TOT | HEAD | LEG | OTHER | TOTAL |
|---------------|---------------|--------------|------------|-------------|------------|--------------|--------------|
| 1982 | 4 | 1 | 5 | 7 | - | - | 12 |
| 1983 | 8 | 1 | 9 | 10 | 4 | 1 | 26 |
| 1984 | 10 | 1 | 11 | 15 | 7 | 2 | 35 |
| 1985 | 12 | 2 | 14 | 16 | 7 | 4 | 46 |
| 1986 | 14 | 1 | 15 | 15 | 11 | 2 | 44 |
| 1987 | 20 | 5 | 25 | 14 | 5 | 6 | 55 |
| 1988 | 25 | 5 | 30 | 26 | 8 | 8 | 73 |
| 1989 | 30 | 9 | 39 | 21 | 10 | 7 | 77 |
| 1990 | 34 | 11 | 45 | 25 | 8 | 5 | 86 |
| 1991 | 53 | 9 | 62 | 26 | 9 | 4 | 103 |
| 1992 | 64 | 15 | 79 | 16 | 10 | 4 | 110 |
| 1993 | 78 | 14 | 92 | 23 | 14 | 3 | 134 |
| 1994 | 91 | 10 | 101 | 25 | 17 | 11 | 154 |
| 1995 | 69 | 7 | 76 | 31 | 13 | 7 | 127 |
| TOTALS | 512 | 91 | 603 | 270 | 123 | 64 | 1146 |