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HOW I TREAT LYMPHOMA IN FERRETS AND GUINEA PIGS.

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Lymphoma is a prevalent malignancy in small mammals, notably ferrets and guinea pigs, impacting the lymphatic system and often presenting diagnostic and therapeutic challenges. In ferrets, lymphoma is the third most common neoplasm, affecting various organs such as lymph nodes, spleen, and liver, with a median diagnosis age of 5 years. Treatment strategies primarily involve chemotherapy, with protocols like modified COP (cyclophosphamide, vincristine, prednisolone) ± L-asparaginase showing a median survival time of 429 days in some cases. Surgical removal of focal masses and supportive care, including prednisone for palliation, are also employed, though no single protocol is universally superior due to limited controlled studies.

The author has used multiple chemotherapy protocol for ferrets but unfortunately, there is not enough data available to conclude significant differences between them regarding treatment efficacy.

The link for the different treatment option is:
https://www.bsavalibrary.com/content/formulary/backmatter/exotic-petschemotherapyprotocolsforlymphomaferrets

Before any chemotherapy is initiated, several diagnostic procedures should be performed in order to assess the extent of the lymphoma (stage) for each individual case. These procedures include a complete blood count including a platelet count, a chemistry profile, whole body radiographs (2 views), abdominal ultrasonography, a bone marrow aspirate and biopsy of affected tissue.

The author has published a routine staging protocol which should be conducted prior to the star of any therapy as it will provide insight into the nature of the lymphoma and therefore provide better information regarding the prognosis of any treatment. In the author's experience there is a significant difference between the anatomical site of the lymphoma (e.g. intestinal vs spinal), the histological appearance (e.g. small cell vs large cell) and the immunohistological form (e.g. B cell vs T cell) of the lymphoma. Knowing all 3 factors of the lymphoma and being able to communicate these factors with an oncologist and the owner will help to improve insight into the clinical prognosis of the case.
The *proposed staging scheme for classifying lymphoma in a ferret is as follows:*

The anatomic site is defined as follows:

A: generalized
B: alimentary
C: thymic
D: skin
E: leukemia (true)
F: others (e.g., solitary renal tumors)

The individual stages are defined as follows:

- Stage 1: single anatomic lesion (nodal or extranodal)
- Stage 2: single lesion with regional lymph node involvement limited to 1 side of the diaphragm

- Stage 3: lesions on both sides of the diaphragm including intra-abdominal or gastrointestinal locations
- Stage 4: multiple sites on both sides of the diaphragm are affected with or without the visceral organs
- Stage 5: manifestation in the blood and involvement of bone marrow and/or other organ systems
  A subclassification scheme based on the presence or absence of clinical signs would also be useful, because this has been shown to be consistently prognostic in dogs and cats:
  a: without clinical sign
  b: with systemic signs

Using flow cytometry or polymerase chain reaction assays to determine clonality and possibly identify cellular antigens could be useful in establishing a diagnosis. However, until those assays have been standardized in ferrets, patients with a circulating lymphocytosis should be interpreted with caution. Considering all these factors, the author proposes the application of the following description to all cases of ferret lymphoma:

1. Clinical stage
2. Histologic evaluation
3. Immunophenotyping (B- vs T-cell lymphoma)

The noninvasive chemo protocol was developed by the author and oncologist to facilitate an ambulatory vs of the famous CHOP protocol which requires repeated iv access. The whole protocol extends over a period of 27 weeks, during which time 19 treatments (usually one visit per week) are necessary making the therapy very involved for the patient, the clinician and the owner. Blood work (CBC only) is repeated 7 times during the protocol to monitor the effect of the myelosuppressive drugs (cyclophosphamide, chlorambucil, procarbazine and cytarabine).

Another chemotherapeutic option is the use of the ‘rescue’ protocol which centers around lomustine at the cat dose given orally once every 3-4 weeks. While this drug is usually not considered a a first drug of choice when treating cats, the author has used it repeatedly in ferrets as a first treatment of choice due to a variety of factors. To date, the author has not seen significant side effects of this treatment protocol, and owners often appreciate the non-invasive and once a month frequency of the protocol.

In guinea pigs, lymphoma frequently manifests as lymphosarcoma with a grave prognosis, often leading to death within weeks. Treatment options are limited, with chemotherapy (e.g., prednisolone, L-asparaginase) and radiation therapy showing minimal success; for instance, total body irradiation has been attempted with temporary lymph node reduction but no long-term survival benefit. It is important to realize that the guinea pig is considered a steroid resistant species, and the use of steroids will not be helpful to try to reduce the lymphocyte count at all. In addition, the guinea pig is producing its own version of asparaginase which makes the use of the chemo-therapeutic agent not effective. The author has treated guinea pigs with whole body radiation resulting in some time in remission, but a cure is not realistic.

Supportive care focusing on reducing stress and maintaining quality of life is critical in both species, given the aggressive nature of the disease and the lack of curative options. Further research into standardized protocols and potential viral etiologies is needed to improve outcomes in these small mammals.

References:

- Mayer,J. and Burgess,K., 20133036243, English, Journal article, USA, doi:10.1053/j.jepm.2012.09.010, 1557-5063, 21, (4), New York, Journal of Exotic Pet Medicine, (343–346), Elsevier, An update on ferret lymphoma: a proposal for a standardized classification of ferret lymphoma., (2012)
- Nagata, K; Mchale, B; Sladakovic, I*; Gutti JR.; Mayer, J. *Total body irradiation for the treatment of lymphoma in a guinea pig (Cavia porcellus)"* Journal of Exotic Pet Medicine 28 (2019), pp. 132-136