Noemí del Castillo Magán
LV, PhD, Acreditada Oncología Gevonc-Avepa
noemidelcastillom@gmail.com

LINFOMA EN EL GATO

INCIDENCIA Y EPIDEMIOLOGÍA

- 50% - 90% de los tumores hematopoyéticos en el gato
- 1/3 de los tumores en el gato
- Incidencia 200 por cada 100.000 gatos
- Cambio en la epidemiología:
  - Antes relacionada con FeLV/FIV
  - Ahora no FeLV/FIV
- Siamés sobrerrepresentado
- No asociado a sexo ni castración

Received: 24 April 2019 | Revised: 20 August 2019 | Accepted: 21 August 2019
DOI: 10.1111/vco.12535

ORIGINAL ARTICLE

Veterinary and Comparative Oncology WILEY

Epidemiological, pathological and immunohistochemical aspects of 125 cases of feline lymphoma in Southern Brazil

Ronaldo V. Leite-Filho[1] | Welden Panziera[1] | Marcele B. Bandinelli[1] | Luan C. Henker[1] | Kalinka da Conceição Monteiro[2] | Luis G. Corbellini[2] | David Driemeier[1] | Luciana Sonne[1] | Saulo P. Pavarini[1]

Abstract

A retrospective study compiling cases of feline lymphoma diagnosed during 12 years (2004-2016) in Southern Brazil was performed. A total of 125 cases of lymphoma diagnosed in cats were reviewed, and information including age, breed, sex and tumour topography were collected. FeLV and FIV immunohistochemical tests were performed, as well as immunophenotyping of lymphomas. The alimentary form represented the most common presentation (42/125), followed by mediastinal lymphoma (35/125). Out of 125 cases, 79 presented positive retroviral immunostaining in tumour tissue (52 FeLV alone, 14 FIV alone and 13 presented FIV and FeLV co-infections). 66/125 of the cases were of T-cell origin and 59/125 of the cases were of B-cell origin. The median age of cats with T-cell lymphoma was 120 months (10-240 months), and 60 months (6-204 months) for cats with B-cell lymphoma. The most frequent alimentary tumour presentation was the enteropathy-associated T-cell lymphoma (type 1), and the major type of mediastinal tumour observed was diffuse large B-cell lymphoma. Considering only mediastinal and alimentary lymphomas (n = 77), the prevalence of mediastinal lymphoma in FeLV-positive cats was 2.21 times higher than the prevalence of this type of tumour in FeLV-negative cats ($P = .036$). Mediastinal lymphoma was more frequently observed in younger cats, and the prevalence of mediastinal tumours in these animals was 3.06 times higher than the prevalence of this tumour form in old cats ($P = .0125$). The present study indicates that retroviral infections still play an important role in the development of feline lymphomas in southern Brazil.

KEYWORDS
B-cell, FeLV, FIV, immunophenotype, T-cell

Received: 24 April 2019 | Revised: 20 August 2019 | Accepted: 21 August 2019
DOI: 10.1111/vco.12535

ORIGINAL ARTICLE

Veterinary and Comparative Oncology WILEY

Epidemiological, pathological and immunohistochemical aspects of 125 cases of feline lymphoma in Southern Brazil

Ronaldo V. Leite-Filho[1] | Welden Panziera[1] | Marcele B. Bandinelli[1] | Luan C. Henker[1] | Kalinka da Conceição Monteiro[2] | Luis G. Corbellini[2] | David Driemeier[1] | Luciana Sonne[1] | Saulo P. Pavarini[1]

TABLE 2 Anatomical classification of lymphomas in 125 necropsied cats and association with median age, sex, tumour retroviral immunolabelling and cell lineage

Type of lymphoma	Total	Median age (months)	Sex	FeLV-positive	FIV-positive	FIV & FeLV	B-cell	T-cell
Alimentary	42	140 (12-240)	27M/15F	7	9	1	12	30
Mediastinal	35	24 (12-132)	19M/16F	31	4	3	18	17
Mixed	13	60 (9-156)	5M/8F	7	4	2	10	3
Abdominal renal	13	108 (12-216)	9M/4F	8	3	2	4	9
Atypical	9	48 (6-180)	5M/4F	6	3	3	7	2
Abdominal combination	8	96 (12-180)	5M/3F	3	3	1	6	2
Abdominal other	3	48 (24-120)	3M/0F	2	1	1	1	2
Nodal	2	102 (60-144)	1M/1F	1	0	0	1	1
Total	125	96 (6-240)	74M/51F	65	27	13	59	66

M, male; F, female. Median: the age range of cats in months is shown in parenthesis.

Received: 24 April 2019 | Revised: 20 August 2019 | Accepted: 21 August 2019
DOI: 10.1111/vco.12535

ORIGINAL ARTICLE

Veterinary and Comparative Oncology WILEY

Epidemiological, pathological and immunohistochemical aspects of 125 cases of feline lymphoma in Southern Brazil

Ronaldo V. Leite-Filho[1] | Welden Panziera[1] | Marcele B. Bandinelli[1] | Luan C. Henker[1] | Kalinka da Conceição Monteiro[2] | Luis G. Corbellini[2] | David Driemeier[1] | Luciana Sonne[1] | Saulo P. Pavarini[1]

TABLE 3 Feline lymphoma classification according to the World Health Organization (WHO) for use in animals, and distribution of sub-types in the different anatomic forms of lymphoma

Type of lymphoma	Total	DLBCL	PTCL	EATL-1	EATL-2	SLBCL	TLL	FBCL	Burkitt-like
Alimentary	42	10	-	19	11	2	-	-	-
Mediastinal	35	19	12	-	-	2	2	-	-
Mixed	13	8	2	-	-	2	1	-	-
Abdominal renal	13	4	9	-	-	-	-	-	-
Atypical	9	6	2	-	-	-	-	-	1
Abdominal combination	8	5	2	-	-	-	-	1	-
Abdominal other	3	1	2	-	-	-	-	-	-
Nodal	2	1	1	-	-	-	-	-	-
Total	125	54	30	19	11	6	3	1	1

DLBCL, diffuse large B-cell lymphoma; PTCL, peripheral T-cell lymphoma unspecified; EATL-1, enteropathy-associated T-cell lymphoma (type 1); EATL-2, enteropathy-associated T-cell lymphoma (type 2); SLBCL, small lymphocytic B-cell lymphoma; TLL, T-lymphoblastic lymphoma; FBCL, Follicular B-cell lymphoma; Burkitt-like, Burkitt-like lymphoma. (–), not present.

ETIOLOGÍA

- Virus
  - FeLV causa más frecuente en la era de los 60-80
  - Leucemia → tipo T
  - Inmunodeficiencia → tipo B
- Inflamación crónica: ¿?
- Dieta: ¿?

PRESENTACIONES

- Alimentario
- Mediastínico
- Multicéntrico
- Nodal
- Extranodal:
  - Renal
  - Nasal
  - Ocular
  - SNC

PATOLOGÍA Y COMPORTAMIENTO

- Alimentario:
  - Inflamación del tracto digestivo +/- afectación de ganglios linfáticos mesentéricos y/o hígado
  - Difuso/solitario
  - 55% de los tumores digestivos en el gato
  - Siamés predispuesto
  - Principalmente edad avanzada:
    - 13 años LSA T
    - 12 años LSA B
    - LGL: 9-10 años
  - 4x en intestino delgado

PATOLOGÍA Y COMPORTAMIENTO

- Alimentario:
  - Clasificación:
    - Células pequeñas:
      - Normalmente T
      - Yeyuno
      - Mucosa y submucosa
      - Transmural solo en ID (efecto masa)
      - Mural + transmural tipo T 83% de los linfomas
    - Células grandes:
      - Normalmente B
      - Transmural
      - Varias localizaciones a la vez (estómago, íleo, ciego)
    - LGL:
      - Normalmente B
      - Efecto masa

Veterinary Pathology
49(4) 658-668

DOI: 10.1177/0300985811404712
http://vet.sagepub.com

Feline Gastrointestinal Lymphoma: Mucosal Architecture, Immunophenotype, and Molecular Clonality

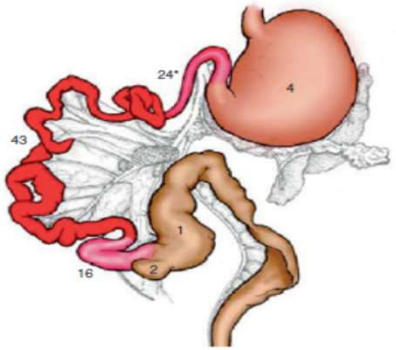
P. F. Moore[1], A. Rodriguez-Bertos[2], and P. H. Kass[3]

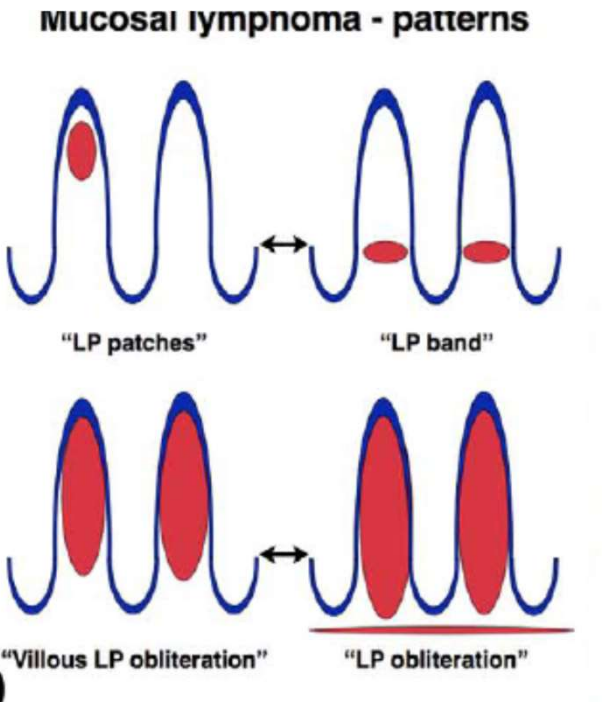
Abstract

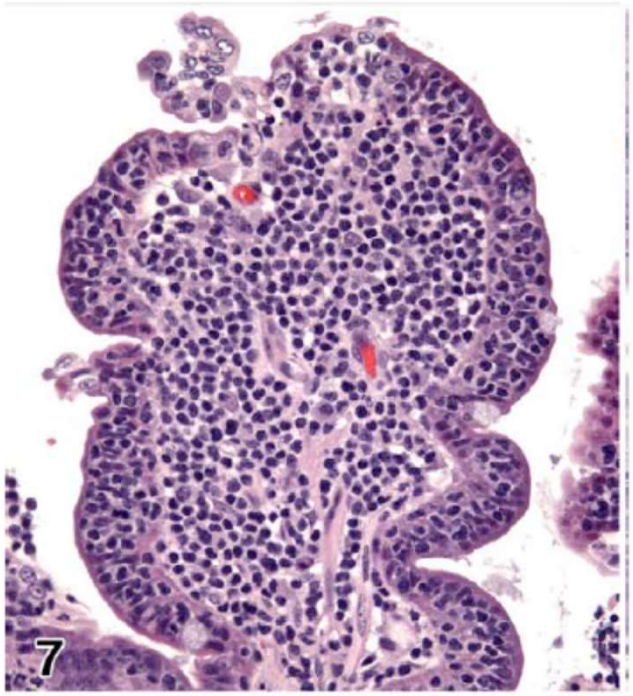
Gastrointestinal lymphomas were identified in 120 cats between 1995 and 2006. Lymphomas were classified according to the World Health Organization (WHO) scheme. Cats with mucosal T-cell lymphoma ($n = 84$) predominated and had a median survival of 29 months. Mucosal T-cell lymphoma matched WHO enteropathy-associated T-cell lymphoma (EATCL) type II. Epitheliotropic T-cell infiltrates were present in 62% of cats and occurred as clusters or diffuse infiltrates of small to intermediate-sized T cells in villous and/or crypt epithelium. Similar lymphocytes infiltrated the lamina propria in distinctive patterns. Cats with transmural T-cell lymphoma ($n = 19$) had a median survival of 1.5 months. Transmural T-cell lymphoma matched WHO EATCL type I. Epitheliotropic T-cell infiltrates were present in 58% of cats. Large lymphocytes ($n = 11$), mostly with cytoplasmic granules (LGL–granzyme B+) ($n = 9$) predominated. Transmural extension across the muscularis propria characterized the lesion. Both mucosal and transmural T-cell lymphomas were largely confined to the small intestine, and molecular clonality analysis revealed clonal or oligoclonal rearrangements of T-cell receptor-γ in 90% of cats. Cats with B-cell lymphoma ($n = 19$) had a median survival of 3.5 months. B-cell lymphomas occurred as transmural lesions in stomach, jejunum, and ileo–cecal–colic junction. The majority were diffuse, large B-cell lymphomas of centroblastic type. In conclusion, T-cell lymphomas characterized by distinctive mucosal architecture, CD3 expression, and clonal expansion predominated in the feline gastrointestinal tract.

TABLE 32-9 Characteristics of Feline Gastrointestinal Lymphoma

Major Characteristic	%*	Cell Size	Epitheliotropism	Median Survival	Clonal or Oligoclonal	Topography
T-cell	83%				90%	
Mucosal	81%		62%	29 months	91%	
WHO EATCL		Small (95%)		NR		
type II		Large (5%)		NR		

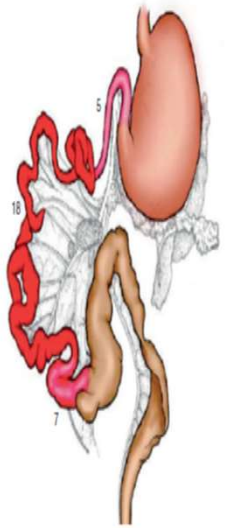


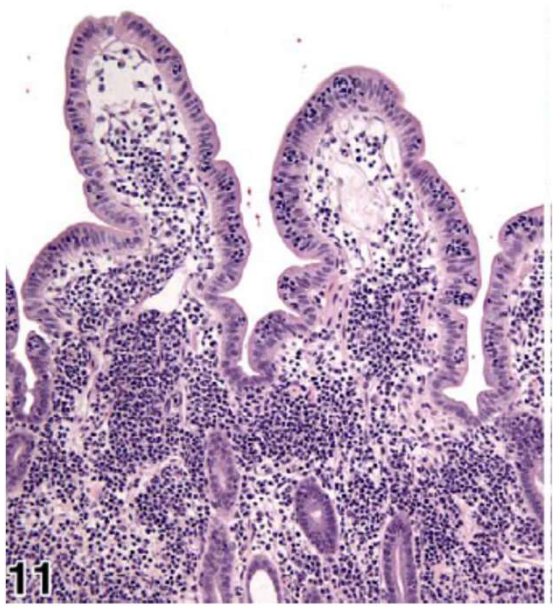




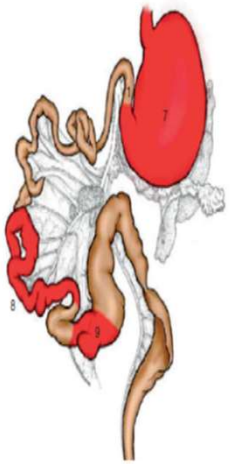
Mucosal lymphoma - patterns

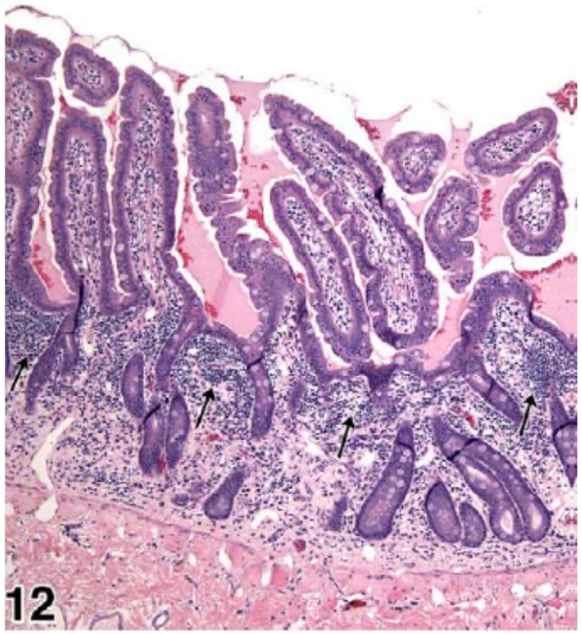
Transmural	19%		58%	1.5 months	90%
WHO EATCL		Small (42%)		NR	
type I		Large† 58%)		NR	





B-cell	17%			50%‡	
Mucosal	5%	All			
Transmural	95%	Large (100%)	<5%	3.5 months	





PATOLOGÍA Y COMPORTAMIENTO

- Mediastínico:
  - Timo (63% de los casos de enfermedad tínica), mediastino, ganglios linfáticos esternales
  - Efusión pleural frecuente (17% de las efusiones del gato)
  - Edad 2-4 años
  - FeLV positivo
  - Células T
  - Siamés mejor pronóstico Hipercalcemia rara

Journal of Feline Medicine and Surgery
201X, Vol XX(X) 1–8

DOI: 10.1177/1098612X13516621
jfms.com
SAGE

Feline mediastinal lymphoma: a retrospective study of signalment, retroviral status, response to chemotherapy and prognostic indicators

Francesca Fabrizio[1], Amy E Calam[2], Jane M Dobson[3],

Abstract

Historically, feline mediastinal lymphoma has been associated with young age, positive feline leukaemia virus (FeLV) status, Siamese breed and short survival times. Recent studies following widespread FeLV vaccination in the UK are lacking. The aim of this retrospective multi-institutional study was to re-evaluate the signalment, retroviral status, response to chemotherapy, survival and prognostic indicators in feline mediastinal lymphoma cases in the post-vaccination era. Records of cats with clinical signs associated with a mediastinal mass and cytologically-/histologically-confirmed lymphoma were reviewed from five UK referral centres (1998–2010). Treatment response, survival and prognostic indicators were assessed in treated cats with follow-up data. Fifty-five cases were reviewed. The median age was 3 years (range, 0.5–12 years); 12 cats (21.8%) were Siamese; and the male to female ratio was 3.2:1.0. Five cats were FeLV-positive and two were feline immunodeficiency-positive. Chemotherapy response and survival was evaluated in 38 cats. Overall response was 94.7%; complete (CR) and partial response (PR) rates did not differ significantly between protocols: COP (cyclophosphamide, vincristine, prednisone) (n = 26, CR 61.5%, PR 34.0%); Madison–Wisconsin (MW) (n = 12, CR 66.7%, PR 25.0%). Overall median survival was 373 days (range, 20–2015 days) [COP 484 days (range, 20–980 days); MW 211 days (range, 24–2015 days) (P = 0.892)]. Cats achieving CR survived longer (980 days versus 42 days for PR; P = 0.032). Age, breed, sex, location (mediastinal versus mediastinal plus other sites), retroviral status and glucocorticoid pretreatment did not affect response or survival. Feline mediastinal lymphoma cases frequently responded to chemotherapy with durable survival times, particularly in cats achieving CR. The prevalence of FeLV-antigenaemic cats was low; males and young Siamese cats appeared to be over-represented.

Feline mediastinal lymphoma: a retrospective study of signalment, retroviral status, response to chemotherapy and prognostic indicators

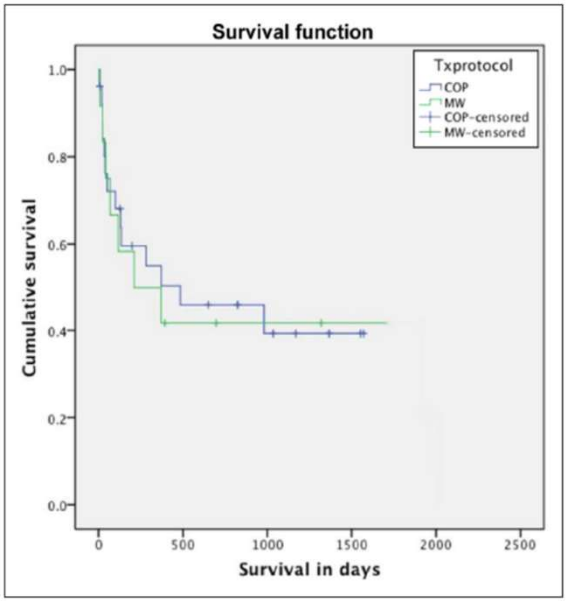


Table 2 Summary of remission rates achieved by 38 cats treated either with a COP (cyclophosphamide, vincristine, prednisone) or a Madison–Wisconsin protocol

Protocol	Number of cats (n = 38)	Complete response rate number (%)	Partial response rate number (%)	No response number (%)
COP	26	16 (61.5)	9 (34.0)	1 (4.5)
Madison–Wisconsin	12	8 (66.7)	3 (25.0)	1 (8.3)

PATOLOGÍA Y COMPORTAMIENTO

- Linfoma nodal:
  - Poco frecuente (4-10%)
  - Más frecuente en gatos < 1 año (1/3 de los casos)
  - Es frecuente la infiltración de la MO y el hígado
  - Tipo Hodking:
    - Ganglios retrofaríngeos
    - 1 solo ganglio
    - Linfoma B rico en células T

PATOLOGÍA Y COMPORTAMIENTO

- Extranodal:
  - Nasal:
    - Más frecuente
    - Normalmente local (20% metástasis en necropsia)
    - Edad 9-10 años
    - Siamés sobrerrepresentado
    - ¾ de células B, grado medio/alto
  - Renal:
    - Segundo más frecuente (1/3 de los casos)
    - Primario/ junto con LSA alimentario
    - Edad media 9 años (6% en gatos < 1 año)
    - Normalmente de células B, grado medio/alto
    - 40-50% evoluciona a SNC

PATOLOGÍA Y COMPORTAMIENTO

- Extranodal:
  - SNC:
    - Intracraneal (2/3 de los LSA origen extracraneal), espinal (40% localizaciones múltiples; normalmente evolución de otra presentación), ambos (1/3)
    - 14% de LSA extranodal
    - Lesión de SNC más frecuente en el gato
    - Edad y FeLV FIV variable
  - Laríngeo/traqueal:
    - 10% de LSA extranodal
    - 9 años, no relacionado con FeLV/FIV
    - Solitario/evolución de otras presentaciones
  - Ocular/retrobulbar
  - Cutáneo:
    - 10-13,5 años
    - Raro, no relacionado con FeLV/FIV
    - Solitario/generalizado
    - Epiteliotropo (T), no epiteliotropo

Veterinary and
Comparative Oncology

Original Article

DOI: 10.1111/vco.12061

Ocular manifestation of lymphoma in newly diagnosed cats

V. Nerschbach[1], J. C. Eule[2], N. Eberle[1], R. Höinghaus[1] and D. Betz[1]

Abstract

Ocular manifestations of lymphoma are described in humans and dogs but rarely in cats. In this prospective study, cats with newly diagnosed and treatment-naïve lymphoma were evaluated concerning clinical stage and ophthalmologic findings. Twenty-six cats were included. In 12 cats (48%), ocular changes were documented. Uveitis anterior and posterior were predominant findings, being present in 58% of affected individuals. Other findings included exophthalmos, corneal surface lesions and chemosis. Eight cats received chemotherapy, two of which had ocular involvement. In these two cats, a complete remission of an anterior and a partial remission of a posterior uveitis were documented. Due to the detection of ocular involvement, a stage migration from stage IV to V occurred in four patients. In the light of these findings, an opthalmological examination may be considered as an important part of staging in feline lymphoma as well as of follow-up examination in affected cats.

PATOLOGÍA Y COMPORTAMIENTO

TABLE 32-8 General Characteristics of the Most Commonly Encountered Anatomic Forms of Lymphoma in Cats*

Anatomic Form†	Relative Frequency	Median Age (years)	FeLV Antigenemic	B-Cell	T-Cell	General Prognosis
Alimentary/Gastrointestinal‡						
Small cell/low grade	Common	13	Rare	Rare	Common	Good
Large cell/intermediate grade	Moderate	10	Rare	Common	Rare	Poor
Nasal	Uncommon	9.5	Rare	Common	Uncommon	Good
Mediastinal	Uncommon	2-4	Common	Uncommon	Common	Poor to fair
Peripheral nodal	Uncommon	7	Uncommon	Moderate	Moderate	Fair to poor
Laryngeal/tracheal	Rare	9	Rare	ID	ID	Good to fair
Renal	Rare	9	Rare	Common	Uncommon	Poor to fair
CNS	Rare	4-10	Rare	ID	ID	Poor
Cutaneous	Rare	10-13	Rare	Rare	Common	Fair
Hepatic (pure)	Rare	12	Rare	Uncommon	Common	Poor

FeLV, Feline leukemia virus; *ID,* insufficient data; *CNS,* central nervous system.

Common = >50% of clinical presentations; moderate = 20%-50% of clinical presentations; uncommon = 5%-20% of clinical presentation; rare = <5% of clinical presentations.

*Data may include overlap or mixing of sites and represents the post-FeLV era.

†As the primary site of presentation, rather than extension or progression.

‡Includes those reported as "intraabdominal" in which intestinal is a documented component.

PROCEDIMIENTO DIAGNÓSTICO: ESTADIO CLÍNICO

- Hemograma completo: 76% anemia en alimentario
- Bioquímica completa:
  - Enzimas hepáticas
  - Urea/BUN
  - Creatinina
  - Albúmina: 23% hipoproteinemia en alimentario
  - Hipercalcemia rara
  - Hipoglucemia: 1/3 de los casos
  - Hiperglobulinemia
  - Cobalamina
- Urianálisis
- FeLV FIV
- Citología/biopsia
- PARR

Trehy et al. BMC Veterinary Research 2014, 10:175
http://www.biomedcentral.com/1746-6148/10/175

BMC Veterinary Research

RESEARCH ARTICLE Open Access

Hypercobalaminaemia is associated with hepatic and neoplastic disease in cats: a cross sectional study

Mary R Trehy[1], Alexander J German[1,2*], Paolo Silvestrini[1], Goncalo Serrano[1] and Daniel J Batchelor[1]

Abstract

Background: When increased serum cobalamin concentrations are encountered clinically they are usually attributed to parenteral supplementation, dietary factors, or otherwise ignored. However, recently, hypercobalaminaemia has been associated with numerous diseases in humans, most notably neoplastic and hepatic disorders. The aim of this retrospective, observational, cross-sectional study was to determine the significance of increased cobalamin in cats.

Results: In total, 237 records were retrieved and 174 cats, of various ages and sexes met the inclusion criteria. A total of 42 cats had increased serum cobalamin concentration, and had not received prior supplementation. Multiple logistic regression analysis revealed that increased serum cobalamin concentration was positively related to pedigree breed (pedigree breeds more likely to have increased cobalamin concentration, odds ratio [OR] 4.24, 95% CI 1.78-10.15, P = 0.001), to having liver disease (OR 9.91, 95% CI 3.54-27.68), and to having a solid neoplasm (OR 8.54, 95% CI 1.10-66.45).

Conclusions: The results of the current study suggest that increased serum cobalamin concentrations should not be ignored in cats with no history of supplementation, and investigation for underlying hepatic or neoplastic disease is warranted.

Trehy et al. BMC Veterinary Research 2014, 10:175
http://www.biomedcentral.com/1746-6148/10/175

BMC Veterinary Research

RESEARCH ARTICLE Open Access

Hypercobalaminaemia is associated with hepatic and neoplastic disease in cats: a cross sectional study

Mary R Trehy[1], Alexander J German[1,2*], Paolo Silvestrini[1], Goncalo Serrano[1] and Daniel J Batchelor[1]

Table 1 Signalment of study cats

Group	Age	Breed		Gender	
		Pedigree breeds	Domestic shorthair	Male (entire)	Female (entire)
Hypercobalaminaemia (44)	9y2m (7 m - 18y 3 m)	22	22	30 (3)	14 (0)
		5 Maine Coon, 4 Bengal ,3 Birman, 2 Burmese,2 Ragdoll, 2 Tonkinese, 1 Persian, 1 Oriental, 1 Siamese, 1 Sphynx			
Normocobalaminaemia (62)	11y5m	19	43	36 (7)	26 (2)
	(2 m - 16y 2 m)	6 British Shorthair, 4 Siamese, 2 Burmese, 2 Selkirk Rex, 1 Asian, 1 Maine Coon, 1 Norwegian Forest Cat, 1 Persian, 1 Ragdoll			
Hypocobalaminaemia (50)	12y1m	16	34	41 (2)	9 (1)
	(3 m - 10y 5 m)	3 Siamese, 2 British Shorthair, 2 Burmese, 2 Maine Coon, 2 Oriental, 2 Ragdoll, 1 Korat, 1 Norwegian Forest Cat, 1 Persian			

Table 2 Presenting signs of study cats by group

Group	Number of cats displaying sign				
	Vomiting	Diarrhoea	Lethargy	Inappetance	Weight Loss
Hypercobalaminaemia (44)	17	14	10	16	21
Normocobalaminaemia (62)	26	24	8	15	26
Hypocobalaminaemia (50)	24	20	11	8	30
Significance (*P*)*	0.67	0.74	0.30	0.06	0.18

*All comparisons made using the Kruskal Wallis test.

Trehy et al. BMC Veterinary Research 2014, 10:175
http://www.biomedcentral.com/1746-6148/10/175

BMC
Veterinary Research

RESEARCH ARTICLE Open Access

Hypercobalaminaemia is associated with hepatic and neoplastic disease in cats: a cross sectional study

Mary R Trehy[1], Ale›

Table 3 Definitive diagnoses* recorded for study cats

Group	Neoplasia	Hepatobiliary disease	Kidney disease	Chronic enteropathy	Other
Hypercobalaminaemia	15	8	2	3	5
(n = 33)	Lymphoma (10)¶	Neutrophilic cholangitis/	CKD (2)		Triaditis (1), FIP (1)
	Duodenal adenocarcinoma (2)	cholangiohepatitis (5)			Tritrichomonas (2)
	Pancreatic carcinoma (1)	Hepatic lipidosis (2)			Idiopathic hypercalcaemia (1)
	Biliary cystadenoma (1)	PVH (1)			
	Metastatic plasma cell tumour (1)				
Normocobalaminaemia	10	1	4	15	10
(n = 40)	Lymphoma (8)¶	Choledocholithiasis (1)			Tritrichomonas (2)
	Duodenal adenocarcinoma (1)				Diabetes mellitus (1)
	Neuroendocrine mass (1)				FOPS (1) FIV (1)
					HES (1), HCM (1)
					Gastric foreign body (1)
					Pancreatitis (1)
					IMPA (1)
Hypocobalaminaemia	14	0	0	13	14
(n = 41)	Lymphoma (14)¶				EPI (5)
					Pancreatitis (3)
					Diabetes mellitus (2)
					Acromegaly (1)
					Pemphigus foliaceus (1)
					Oesophageal stricture (1)
					Intussusception (1)

PROCEDIMIENTO DIAGNÓSTICO: ESTADIO CLÍNICO

Box 32-3 Clinical Staging System for Feline Lymphoma

Stage 1

- A single tumor (extranodal) or single anatomic area (nodal)
- Includes primary intrathoracic tumors

Stage 2

- A single tumor (extranodal) with regional lymph node involvement
- Two or more nodal areas on the same side of the diaphragm
- Two single (extranodal) tumors with or without regional lymph node involvement on the same side of the diaphragm
- A resectable primary gastrointestinal tract tumor, usually in the ileocecal area, with or without involvement of associated mesenteric nodes only

Stage 3

- Two single tumors (extranodal) on opposite sides of the diaphragm
- Two or more nodal areas above and below the diaphragm
- All extensive primary unresectable intraabdominal disease
- All paraspinal or epidural tumors, regardless of other tumor site or sites

Stage 4

- Stages 1-3 with liver and/or spleen involvement

Stage 5

- Stages 1-4 with initial involvement of CNS or bone marrow or both

Data from Terry A, Callanan JJ, Fulton R, et al: Molecular analysis of tumours from feline immunodeficiency virus (FIV)-infected cats: An indirect role for FIV, *Int J Cancer* 61:227–232, 1995.

TRATAMIENTO Y PRONÓSTICO

- Menos establecido que en el perro
- Linfomas intermedios/grado alto:
  - Protocolos similares al perro
  - Respuesta 50-80%
  - Media de remisión 4 meses
  - Media supervivencia 6 meses
  - Protocolos:
    - COP/CHOP
    - Lomustina: 30-60 mg/m2 cada 3-6 semanas
    - Metrotexato
- Linfomas de bajo grado:
  - Corticoides:
    - Prednisona
    - Prednisolona
    - Dexametasona:
      - 0,1-0,3 mg/kg/día y reducir
      - 1 mg/kg/semana
  - Clorambucilo

TRATAMIENTO Y PRONÓSTICO

TABLE 32-10 The CHOP-Based Chemotherapy Protocol for Cats with Lymphoma Employed by the Author

TREATMENT WEEK	DRUG, DOSAGE, AND ROUTE
1	Vincristine 0.5-0.7 mg/m² IV L-Asparaginase 400 Units/kg SQ Prednisone 2.0 mg/kg PO, q24hr
2	Cyclophosphamide 200 mg/m² IV Prednisone 2.0 mg/kg PO, q24hr
3	Vincristine 0.5-0.7 mg/m² IV Prednisone 1.0 mg/kg PO, q24hr
4	Doxorubicin 25 mg/m² IV Prednisone 1.0 mg/kg PO*
6	Vincristine 0.5-0.7 mg/m² IV
7†	Cyclophosphamide 200 mg/m² IV
8	Vincristine 0.5-0.7 mg/m² IV
9‡	Doxorubicin 25 mg/m² IV
11	Vincristine 0.5-0.7 mg/m² IV
13†	Cyclophosphamide 200 mg/m² IV
15	Vincristine 0.5-0.7 mg/m² IV
17	Doxorubicin 25 mg/m² IV
19	Vincristine 0.5-0.7 mg/m² IV
21†	Cyclophosphamide 200 mg/m² IV
23	Vincristine 0.5-0.7 mg/m² IV
25§	Doxorubicin 25 mg/m² IV

IV, Intravenous; *SQ*, subcutaneous; *PO*, by mouth.

*Prednisone is continued (1 mg/kg PO) every other day from this point on.

†If renal lymphoma or central nervous system (CNS) lymphoma is present, substitute cytosine arabinoside (Ara-C) at 600 mg/m² divided SQ twice a day (BID) over 2 days at these treatments.

‡If in complete remission at week 9, continue to week 11.

§If in complete remission at week 25, therapy is discontinued and cat is rechecked monthly for recurrence.

NOTE: A complete blood count (CBC) should be performed prior to each chemotherapy. If neutrophils are <1500 cells/UL, wait 5 to 7 days, repeat CBC, then administer the drug if neutrophils have risen above the 1500 cell/UL cutoff.

TABLE 32-11 COP Protocol for Lymphoma in Cats

DRUG	FREQUENCY OF DRUG DELIVERY
Cyclophosphamide 300 mg/m² IV	Given every 3 weeks on the day after vincristine. Discontinued if animal is in complete remission at 1 year.
Vincristine (Oncovin) 0.75 mg/m² IV	Given weekly on weeks 1, 2, 3, and 4, then given every 3 weeks thereafter on the day before cyclophosphamide, Discontinued if animal is in complete remission at 1 year.
Prednisone/ prednisolone 50 mg/m² orally	Given daily for 1 year.

NOTE: A complete blood count (CBC) should be performed prior to each treatment. If neutrophils are $<1.5 \times 10^9$/L, wait 5 to 7 days and repeat the CBC. Treat if neutrophils are $\geq 1.5 \times 10^9$/L.

TRATAMIENTO Y PRONÓSTICO

- Alimentario:
  - I: mayoría: mucosa, células pequeñas, T, buen pronóstico
    - Tratamiento:
      - Clorambucilo: 20 mg/m2 cada 2 semanas
      - Prednisolona/prednisona:
        - 1-2 mg/kg/PO diario y dosis decrecientes.
        - Mantener 1 mg/kg/48 h hasta recaída
      - Tasa de respuesta 90%
      - Supervivencia media 2 años o más
      - Protocolos rescate:
        - Ciclofosfamida: 25 mg/m2 L, X cada 2 semanas
        - Lomustina
        - Vinblastina (anecdótico)

TRATAMIENTO Y PRONÓSTICO

- Alimentario:
  - II: B, LGL T, T de células pequeñas transmural
    - Tratamiento: CHOP
    - Supervivencia media 45-100 días (23 días para LGL)

Veterinary Pathology
49(4) 658-668

DOI: 10.1177/0300985811404712
http://vet.sagepub.com

Feline Gastrointestinal Lymphoma: Mucosal Architecture, Immunophenotype, and Molecular Clonality

P. F. Moore[1], A. Rodriguez-Bertos[2], and P. H. Kass[3]

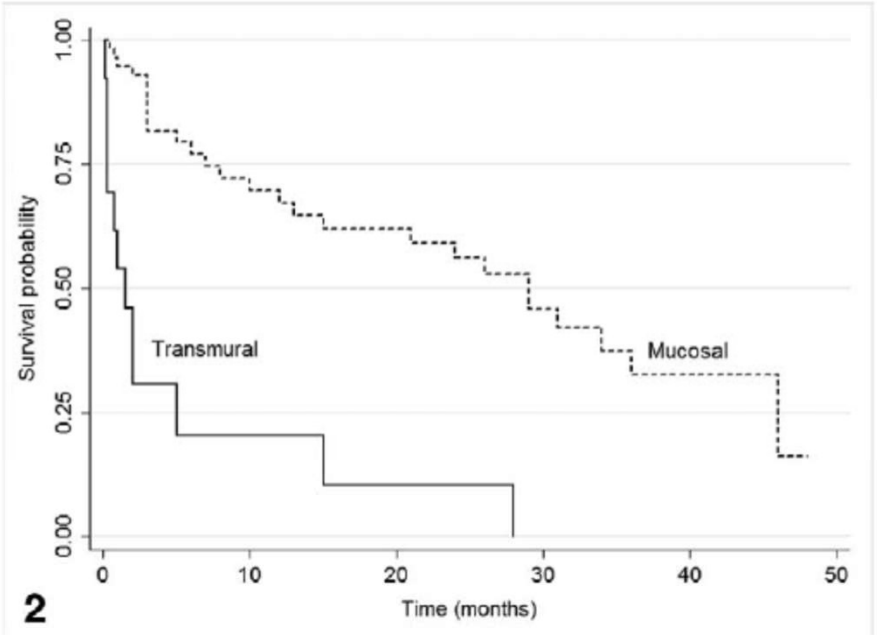


Figure 2. Kaplan-Meier plot of survival comparing cats with mucosal T-cell lymphoma (median survival 29 months) with cats with transmural T-cell lymphoma (median survival 1.5 months).

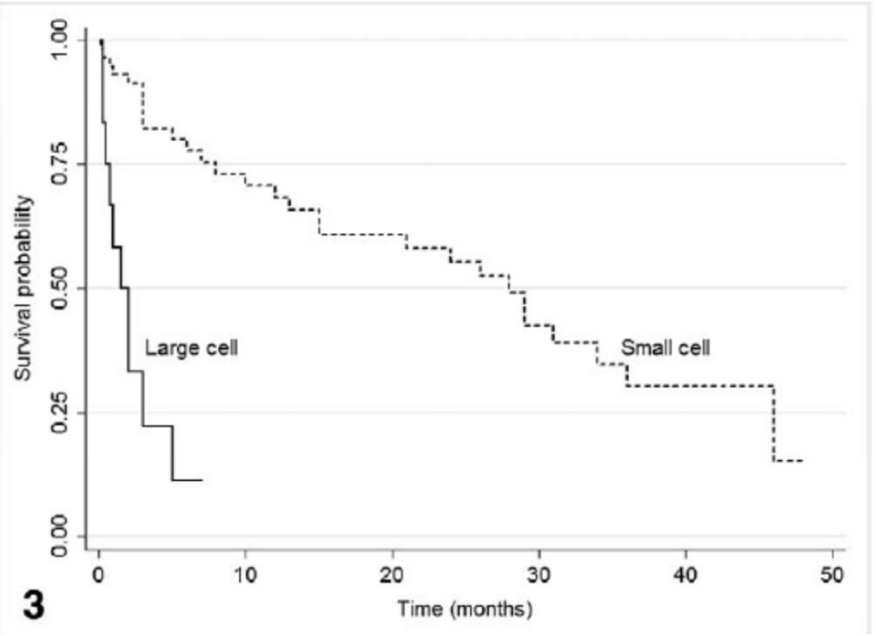


Figure 3. Kaplan-Meier plot of survival comparing cats with T-cell lymphoma, small-cell type (median survival 28 months) with cats with T-cell lymphoma, large-cell type (median survival 1.5 months).

Published in final edited form as:
J Am Anim Hosp Assoc. 2010 ; 46(6): 413–417.

Treatment of Feline Gastrointestinal Small-Cell Lymphoma With Chlorambucil and Glucocorticoids

Timothy J. Stein, DVM, PhD, Diplomate ACVIM (Oncology), **MacKenzie Pellin, BS**, **Howard Steinberg, VMD, PhD, Diplomate ACVP**, and **Ruthanne Chun, DVM, Diplomate ACVIM (Oncology)**

Abstract

Gastrointestinal (GI) lymphoma is the most frequently diagnosed form of lymphoma in the cat and is categorized into two distinct forms based on the size of neoplastic lymphocytes. Treatments for both large- and small-cell GI lymphoma have been described previously; however, multiple chemotherapy protocols were used, a minimal amount of histopathological characterization was provided, and, in most studies, the majority of diagnoses were obtained via endoscopic pinch biopsies. Twenty-eight cats (24 with full-thickness intestinal biopsies) were diagnosed with small-cell GI lymphoma and treated with a combination of chlorambucil and glucocorticoids. The majority of cases were strongly CD3+, and many displayed epitheliotropism. The overall clinical response rate was 96%, with a median clinical remission duration of 786 days. Follow-up identified seven cats with relapsed disease—all of which were treated with a rescue protocol of cyclophosphamide and glucocorticoids; the response rate was 100%, and four of the 28 cats were diagnosed with a second malignancy.

DOI: 10.1002/vms3.9

Original Article

Outcome and toxicity assessment of feline small cell lymphoma: 56 cases (2000–2010)

Kendra V. Pope*, Alex E. Tun*, Conor J. McNeill†, Dorothy C. Brown* and Erika L. Krick*

**Department of Clinical Studies, School of Veterinary Medicine, University of Pennsylvania, Philadelphia, Pennsylvania, USA and †Hope Advanced Veterinary Center, Vienna, Virginia, USA*

Abstract

Feline small cell lymphoma is associated with greater response to treatment and survival when compared to large cell lymphoma. Treatment-associated toxicity, response to rescue chemotherapy and prognostic factors are largely unknown. This retrospective study was performed to identify treatment-associated toxicity, response to rescue chemotherapy and treatment outcome for cats diagnosed with small cell lymphoma of various anatomic locations. Medical records from 56 cats were evaluated. All cats were treated with glucocorticoid and chlorambucil with discontinuation of treatment recommended at 1 year if complete clinical response was documented. Chemotherapy toxicity was uncommon (33.9%) and generally mild. Grade III or IV hepatotoxicity was documented in 10.7% of patients. Overall response rate was 85.7% with glucocorticoid and chlorambucil. Median progression-free survival was 1078 days. Overall response rate for rescue chemotherapy was 59%. Reintroduction of prednisone and chlorambucil was associated with significantly longer survival than prednisone and lomustine (>1500 vs. 492 days, $P = 0.01$). Median overall survival times for cats with lymphoma of the gastrointestinal tract was not significantly different from those with extra-intestinal disease locations (1148 vs. 1375 days, $P = 0.23$). Median overall survival was 1317 days. Toxicity, other than hepatotoxicity was mild. Rescue chemotherapy with re-introduction of glucocorticoids and chlorambucil was most successful. Discontinuation of glucocorticoid and chlorambucil with subsequent reintroduction as rescue chemotherapy appears to be just as effective as continued administration in cats.

Original Article

DOI: 10.1111/vco.12166

Feline discrete high-grade gastrointestinal lymphoma treated with surgical resection and adjuvant CHOP-based chemotherapy: retrospective study of 20 cases

E. D. Gouldin[1], C. Mullin[2], M. Morges[3], S. J. Mehler[1], L.-P. de Lorimier[4], C. Oakley[5], R. Risbon[6], L. May[1], S. A. Kahn[7] and C. Clifford[8]

Abstract

The aim of this retrospective study was to evaluate the outcome of cats treated with surgical intervention for a discrete intermediate-/high-grade gastrointestinal lymphoma prior to CHOP-based chemotherapy. Variables including sex, breed, haematocrit, white blood cell count, serum albumin concentration, clinical stage of disease, gastrointestinal obstruction and peritonitis were assessed for their effect on survival. Twenty cats met the inclusion criteria with three cats still alive at the time of data analysis. The overall median survival time (MST) was 417 days (range: 12–2962 days). The disease-free interval (DFI) was 357 days (range: 0–1585 days) with six cats still deemed in remission prior to death. Only clinical stage had a significant effect on both MST and DFI. Cats with discrete intermediate/high-grade gastrointestinal lymphoma that undergo surgical resection followed by adjuvant CHOP chemotherapy may achieve acceptable overall survival times.

Original Article

DOI: 10.1111/vco.12243

A retrospective evaluation of lomustine (CeeNU) in 32 treatment naïve cats with intermediate to large cell gastrointestinal lymphoma (2006–2013)†

S. E. Rau‡ and K. E. Burgess

Abstract

Multi-drug chemotherapy protocols for feline lymphoma have demonstrated variable efficacy and tolerability. In phase I trials, lomustine has demonstrated efficacy for cats with lymphoma though its use for treatment naïve feline intermediate/large cell gastrointestinal (GI) lymphoma remains unknown. This study evaluated the efficacy and tolerability of lomustine for the treatment of feline GI lymphoma. Thirty-two cats with histologically or cytologically confirmed intermediate/large cell GI lymphoma were evaluated retrospectively. Factors assessed included clinical signs, hematologic/biochemical parameters and use of L-asparaginase at induction. A response rate of 50% (16/32), with median duration of response of 302 days (range 64–1450 days), was found. Median progression-free interval was 132 days (range 31–1450 days), with overall median survival time of 108 days (range 4–1488 days). History of hyporexia, presence of anaemia and dose of lomustine were significantly associated with progression-free survival. Overall, lomustine is a well-tolerated and effective treatment for feline GI lymphoma.

DOI: 10.1111/vco.12243

A retrospective evaluation of lomustine (CeeNU) in 32 treatment naïve cats with intermediate to large cell gastrointestinal lymphoma (2006–2013)†

S. E. Rau‡ and K. E. Burgess

Table 2. Response, remission and survival information for cats with intermediate to large cell gastrointestinal lymphoma receiving lomustine

	Lomustine
Response	
CR	7 (22%)
PR	9 (28%)
SD	5 (16%)
PD	11 (34%)
Median duration of response (days)	302 (64–1450)
Median progression-free interval (days)	132 (31–1450)
Median survival time (days)	
Overall (CR + PR + SD + PD)	108 (4–1488)
Responders and stable (CR + PR + SD)	215 (53–1488)
Responders (CR + PR)	330 (84–1488)

recently progressed while on lomustine.

Factors associated with shorter median response duration (MRD), PFI or MST on both univariate and multivariate analysis included presence of hyporexia at presentation, anaemia (packed cell volume <30%) and the dose of CeeNU administered (<40 mg m^{-2}). Hyporexic cats ($n = 23$) had a PFI of 94 versus 362 days for non-anorexic cats ($n = 9$) ($P = 0.0193$). Cats presenting with an anaemia of <30% ($n = 16$) had a reduced MRD, PFI and MST compared with non-anaemic cats ($n = 16$). Anaemic cats had an MRD of 95 days, PFI of 57 days and MST of 67 days compared to non-anaemic cats with an MRD of 322 days ($P = 0.0097$), PFI of 140 days ($P = 0.0138$) and MST of 128 days ($P = 0.0205$). Cats receiving lomustine at >40 mg M^{-2} had a longer PFI of 213 days versus 75 days for cats receiving <40 mg m^{-2} ($P = 0.0127$).

Mechlorethamine, vincristine, melphalan and prednisolone rescue chemotherapy protocol for resistant feline lymphoma

Journal of Feline Medicine and Surgery
1–6

DOI: 10.1177/1098612X17735989
journals.sagepub.com/home/jfms

This paper was handled and processed by the American Editorial Office (AAFP) for publication in *JFMS*

SAGE

Olya A Martin[1] and Josh Price[2]

Abstract

Objectives The goals of this retrospective study were to evaluate the use of mechlorethamine, vincristine, melphalan and prednisolone (MOMP) chemotherapy for rescue of feline lymphoma, to describe the protocol's toxicity and to determine prognostic indicators for progression-free survival.

Methods The medical records of 12 cats treated with MOMP chemotherapy at the University of Tennessee Veterinary Medical Center between 2007 and 2017 were evaluated. Parameters assessed included lymphoma cell size, anatomical location, number of previous chemotherapy drugs and number of previous rescue protocols received. Chemotherapy-related toxicity was also described.

Results Seven of 12 cats responded to this rescue protocol. Three cats experienced complete response and four cats achieved partial response for a median duration of 39 days (range 14–345 days). Cats that achieved complete response had a significantly longer median progression-free survival than cats that did not respond to treatment. Five of 12 cats developed hematologic toxicity (neutropenia) and one cat developed gastrointestinal toxicity. Toxicity was mild in most cases; no cats needed to be hospitalized. Neutropenia was associated with increased progression-free survival.

Conclusions and relevance MOMP is a safe and effective rescue chemotherapy protocol for cats with relapsing and refractory lymphoma.

Efficacy and toxicity of mustargen, vincristine, procarbazine and prednisone (MOPP) for the treatment of relapsed or resistant lymphoma in cats

Journal of Feline Medicine and Surgery
1–6

DOI: 10.1177/1098612X19841916
journals.sagepub.com/home/jfm

This paper was handled and processed by the American Editorial Office (AAFP) for publication in *JFMS*

SAGE

Martha A MaloneyHuss[1], Glenna E Mauldin[2], Dorothy C Brown[3], Sridhar M Veluvolu[4] and Erika L Krick[5]

Abstract

Objectives The aims of this study were to evaluate the safety of mustargen, vincristine, procarbazine and prednisone (MOPP) chemotherapy in the treatment of relapsed or refractory feline lymphoma, and to determine the overall response rate and median remission time with this protocol.

Methods The medical records of 38 cats with relapsed or refractory lymphoma treated with MOPP chemotherapy at three institutions (University of Pennsylvania, the Animal Medical Center, and VCA Western Veterinary Specialist and Emergency Centre) were examined. Information evaluated included patient signalment, feline immunodeficiency virus/feline leukemia virus status, anatomic location(s) of lymphoma, prior protocols (type and number), MOPP doses, MOPP response, remission duration, hematologic and biochemical parameters, and owner-reported adverse effects.

Results Overall, 70.3% of cats responded to MOPP chemotherapy. Among the responders, the median remission duration was 166 days. The most common adverse effects were neutropenia and gastrointestinal upset, which were reported in 18.4% of cats. In 55.3% of cats, no adverse effects were reported. In total, 30.8% of responders continued to respond 6 months following the initiation of MOPP, and 15.4% maintained a response 1 year after starting MOPP.

Conclusions and relevance MOPP is a safe protocol for the treatment of relapsed or refractory feline lymphoma, with a promising overall response rate and median remission time.

TRATAMIENTO Y PRONÓSTICO

- Mediastínico:
  - Gatos jóvenes FeLV +:
    - Mal pronóstico (2-3 meses)
    - CHO/COP
  - Gatos jóvenes FeLV -/Siamés:
    - 90% alcanzan remisión
    - Supervivencia 9 meses

Original Article

Journal of Feline Medicine and Surgery
201X, Vol XX(X) 1–8

DOI: 10.1177/1098612X13516621
jfms.com
SAGE

Feline mediastinal lymphoma: a retrospective study of signalment, retroviral status, response to chemotherapy and prognostic indicators

Abstract

Historically, feline mediastinal lymphoma has been associated with young age, positive feline leukaemia virus (FeLV) status, Siamese breed and short survival times. Recent studies following widespread FeLV vaccination in the UK are lacking. The aim of this retrospective multi-institutional study was to re-evaluate the signalment, retroviral status, response to chemotherapy, survival and prognostic indicators in feline mediastinal lymphoma cases in the post-vaccination era. Records of cats with clinical signs associated with a mediastinal mass and cytologically-/histologically-confirmed lymphoma were reviewed from five UK referral centres (1998–2010). Treatment response, survival and prognostic indicators were assessed in treated cats with follow-up data. Fifty-five cases were reviewed. The median age was 3 years (range, 0.5–12 years); 12 cats (21.8%) were Siamese; and the male to female ratio was 3.2:1.0. Five cats were FeLV-positive and two were feline immunodeficiency-positive. Chemotherapy response and survival was evaluated in 38 cats. Overall response was 94.7%; complete (CR) and partial response (PR) rates did not differ significantly between protocols: COP (cyclophosphamide, vincristine, prednisone) (n = 26, CR 61.5%, PR 34.0%); Madison–Wisconsin (MW) (n = 12, CR 66.7%, PR 25.0%). Overall median survival was 373 days (range, 20–2015 days) [COP 484 days (range, 20–980 days); MW 211 days (range, 24–2015 days) (P = 0.892)]. Cats achieving CR survived longer (980 days versus 42 days for PR; P = 0.032). Age, breed, sex, location (mediastinal versus mediastinal plus other sites), retroviral status and glucocorticoid pretreatment did not affect response or survival. Feline mediastinal lymphoma cases frequently responded to chemotherapy with durable survival times, particularly in cats achieving CR. The prevalence of FeLV-antigenaemic cats was low; males and young Siamese cats appeared to be over-represented.

TRATAMIENTO Y PRONÓSTICO

- Nodal:
  - Bajo grado: clorambucilo
  - Intermedio/alto grado: COP/CHOP
  - Tipo Hodking (linfoma B rico en células T):
    - Normalmente en la zona de la cabeza
    - Buen pronóstico con cirugía
    - Algunos autores combinan con prednisolona +/- clorambucilo
- Nasal:
  - Buen pronóstico con radioterapia (RC 75-95%; 1,5-3 años) (si no RC → 4,5 meses)
  - Quimioterapia (COP/CHOP) (RC 75%; 2 años)

Received: 4 February 2019 | Revised: 12 June 2019 | Accepted: 14 June 2019
DOI: 10.1111/vco.12517

ORIGINAL ARTICLE

Veterinary and Comparative Oncology WILEY

Outcome and failure patterns of localized sinonasal lymphoma in cats treated with first-line single-modality radiation therapy: A retrospective study

Valeria S. Meier[1] | Laura Beatrice[1] | Michelle Turek[2]
Simona Cancedda[4] | Katerina Stiborova[1] | Maximilian K
Laura Marconato[4] | Mathias S. Weyland[5] | Carla Rohr

Abstract

Failure rate and site are not well defined in localized sinonasal lymphoma in cats treated with radiotherapy. In this study, we describe (a) failure pattern, (b) outcome, (c) influence of previously reported prognostic variables on the outcome in cats with suspected localized sinonasal lymphoma. In this multi-institutional retrospective study, we included 51 cats treated with single-modality radiotherapy. Cats were irradiated using 10x4.2Gy (n = 32), 12x3Gy (n = 11) or 5x6Gy (n = 8). Regional lymph nodes were prophylactically irradiated in 24/51 cats (47.1%). Twenty-five cats (49.0%) developed progressive disease: progression was local (nasal) in five (9.8%), locoregional (nodal) in two (3.9%), local and locoregional in three (5.9%), systemic in nine (17.6%) and both local and systemic in six cats (11.8%). No cat receiving prophylactic nodal irradiation had progression in the locoregional lymph nodes. The median time to progression was 974 days (95%CI: 283;1666), with 58% and 53% of cats free of progression at 1 and 2 years, respectively. Median overall survival was 922 days (95%CI: 66;1779) with 61% and 49% alive at 1 and 2 years, respectively. Half of the cats that died of relapse/progression (13/26) died within 6 months of treatment, suggesting possible shortcomings of staging, rapid dissemination of disease or sequential lymphomagenesis. None of the prognostic factors evaluated were predictive of outcome (prednisolone use, anaemia, nasopharyngeal involvement, modified canine Adams tumour stage, protocol, total dose). Radiotherapy is an effective treatment for localized sinonasal lymphoma with a long time to progression. However, in one-third of the cats, systemic disease progression occurs soon after radiotherapy.

TRATAMIENTO Y PRONÓSTICO

- SNC:
  - Apenas hay información
  - Quimioterapia:
    - Respuesta 50%
    - Supervivencia 1-2 meses
- Laríngeo/traqueal:
  - Radioterapia/quimioterapia (CHO/COP, RC 90%)
  - Supervivencia 5meses-1 año (poca información)
- Cutáneo:
  - Descrita RC con lomustina
  - Valorar cirugía en lesiones nodulares únicas

Veterinary and
Comparative Oncology

Original Article

DOI: 10.1111/vco.12081

Patient characteristics, histopathological findings and outcome in 97 cats with extranodal subcutaneous lymphoma (2007–2011)

K. Meichner[1] and W. von Bomhard[2]

Abstract

This study describes epidemiologic, clinical, macro- and microscopic tumour characteristics and outcome in 97 cats with subcutaneous lymphoma, an uncommon variant of feline extranodal lymphoma. Middle-aged (median 11 years), male (60.8%), Domestic Shorthair cats (89.7%) were commonly affected. Most tumours presented as a painless, firm, subcutaneous nodule or mass, with predilection to the lateral thoracic or abdominal wall, and the interscapular region. Deep subcutaneous invasion with extension into superficial or underlying tissues, extensive central areas of necrosis and peripheral inflammation were characteristic histopathological findings. Prevalence of retroviral infection was low. Local relapses after therapy were common (43.5%), and 32.2% had distant involvement later in course. Median overall survival was 148 days. Subcutaneous lymphoma should be considered a rare but important differential diagnosis for a subcutaneous mass in cats. Tumours show an aggressive biological behaviour. Treatment options including prognosis should be investigated in further studies.

Veterinary and Comparative Oncology

Original Article

DOI: 10.1111/vco.12061

Ocular manifestation of lymphoma in newly diagnosed cats

V. Nerschbach[1], J. C. Eule[2], N. Eberle[1], R. Höinghaus[1] and D. Betz[1]

Abstract

Ocular manifestations of lymphoma are described in humans and dogs but rarely in cats. In this prospective study, cats with newly diagnosed and treatment-naïve lymphoma were evaluated concerning clinical stage and ophthalmologic findings. Twenty-six cats were included. In 12 cats (48%), ocular changes were documented. Uveitis anterior and posterior were predominant findings, being present in 58% of affected individuals. Other findings included exophthalmos, corneal surface lesions and chemosis. Eight cats received chemotherapy, two of which had ocular involvement. In these two cats, a complete remission of an anterior and a partial remission of a posterior uveitis were documented. Due to the detection of ocular involvement, a stage migration from stage IV to V occurred in four patients. In the light of these findings, an opthalmological examination may be considered as an important part of staging in feline lymphoma as well as of follow-up examination in affected cats.

Feline extranodal lymphoma: response to chemotherapy and survival in 110 cats

Journal of Small Animal Practice (2009)
50, 584–592
DOI: 10.1111/j.1748-5827.2009.00813.x

Accepted: 4 June 2009

OBJECTIVE: To determine response to treatment, survival and prognostic factors for feline extranodal lymphoma in the UK.

METHODS: Records of cats diagnosed with lymphoma of extranodal sites at seven referral centres were reviewed and information on signalment, tumour location, prior treatment and chemotherapy protocol recorded. Factors influencing response to treatment and survival were assessed.

RESULTS: One hundred and forty-nine cases met inclusion criteria. Sixty-nine cats had nasal lymphoma, 35 renal, 15 central nervous system, 11 laryngeal and 19 miscellaneous locations. Sixty-six cats received cyclophosphamide, vincristine, prednisolone, 25 Wisconsin-Madison doxorubicin-containing multi-agent protocol, 10 prednisolone alone and nine other combinations. The response rate for the 110 treated cats was 85·5 per cent. Of cyclophosphamide, vincristine, prednisolone treated cats 72·7 per cent achieved complete remission, median survival 239 days. Sixty-four per cent of Wisconsin-Madison treated cats achieved complete remission, median survival 563 days. Cats with nasal lymphoma achieving complete remission had the longest survival (749 days) and cats with central nervous system lymphoma the shortest (70 days). If complete remission was achieved, prior treatment with corticosteroids significantly reduced survival time.

CLINICAL SIGNIFICANCE: Cats with extranodal lymphoma respond to chemotherapy and achieve survival times comparable to other locations. Corticosteroid pretreatment reduced survival time in cats achieving complete remission.

Table 2. Treatment of cats with extranodal lymphoma according to lymphoma location

Location	Treatment type			
	COP	WM	OTHER	PRED
All	66	25	9	10
Nasal	**38**	2	4	5
Renal	9	**13**	2	5
CNS	2	3	2	0
Laryngeal	5	2	1	0
Misc	12	5	0	0

Journal of Small Animal Practice (2009)
50, 584–592
DOI: 10.1111/j.1748-5827.2009.00813.x

Accepted: 4 June 2009

Table 3. Response to treatment according to lymphoma location and treatment group

	Number of cats (per cent)				
	Treated	Responding	Achieving CR	Achieving PR	Achieving NR
Lymphoma location					
Nasal	44	41 (93·2)	32 (72·7)	9 (20·5)	3 (6·8)
Renal	24	18 (75·0)	15 (62·5)	3 (12·5)	6 (25·0)
CNS	7	5 (71·4)	3 (42·9)	2 (28·6)	2 (28·6)
Laryngeal	8	8 (100)	7 (87·5)	1 (12·5)	0 (0·0)
Misc	17	15 (88·2)	12 (70·6)	3 (17·7)	2 (11·8)
Totals	100	87 (87·0)	69 (69·0)	18 (18·0)	13 (13·0)
Treatment type					
COP	66	61 (92·4)	48 (72·7)	13 (19·7)	5 (7·6)
WM	25	18 (72·0)	16 (64·0)	2 (8·0)	7 (28·0)
PRED	10	7 (70·0)	3 (30·0)	4 (40·0)	3 (30·0)
OTHER	9	8 (88·9)	5 (55·6)	3 (33·3)	1 (11·1)
Total (including PRED group)	110	94 (85·5)	72 (65·5)	22 (20·0)	16 (14·6)
Total (without PRED group)	100	87 (87·0)	69 (69·0)	18 (18·0)	13 (13·0)

Journal of Small Animal Practice (2009)
50, 584–592
DOI: 10.1111/j.1748-5827.2009.00813.x

Accepted: 4 June 2009

Table 4. Survival data for cats with extranodal lymphoma, excluding prednisolone group (information for that group illustrated in one line)

Variable	N (#cens)	Median survival (days) (95 per cent CI)	Median survival CR (days) (95 per cent CI)	Median survival PR (days) (95 per cent CI)
Chemotherapy treated cats	100 (21)	138 (80–196)	341 (93–589)	54 (23–85)
Location				
Nasal	44 (13)	140 (73–207)	749 (131–1367)	54 (10–98)
Renal	24 (4)	91 (35–147)	212 (31–393)	52 (25–79)
Laryngeal	8 (1)	112 (0–241)	173 (16–330)	22*
CNS	7 (0)	70 (24–116)	480 (0–1069)	52*
Misc	17 (3)	216 (132–300)	245 (100–389)	171*
Treatment group				
COP	66 (13)	171 (74–268)	239 (80–398)	54 (0–110)
WM	25 (6)	112 (100–124)	563 (70–1056)	52*
PRED	10 (3)	60 (0–115)	107*	60 (7–113)
OTHER	9 (2)	138 (6–270)	177 (0–1102)	54 (23–85)
Previouscorticosteroids				
Yes	37 (6)	112 (64–159)	239 (92–386)	92 (0–228)
No	59 (15)	177 (79–275)	563 (0–1137)	52 (8–96)

CNS Central nervous system; Misc Miscellaneous; COP Cyclophosphamide, vincristine, prednisolone; WM Wisconsin-Madison; PRED Prednisolone group; #cens Number censored; CI Confidence interval; CR Complete remission; PR Partial remission

*Too few data points to construct CI

PRONÓSTICO

- Difícil de predecir
- Respuesta al tratamiento

Feline large-cell lymphoma following previous treatment for small-cell gastrointestinal lymphoma: incidence, clinical signs, clinicopathologic data, treatment of a secondary malignancy, response and survival

Journal of Feline Medicine and Surgery
1–10

DOI: 10.1177/1098612X18779870
journals.sagepub.com/home/jfm

This paper was handled and processed by the American Editorial Office (AAFP) for publication in *JFMS*

SAGE

Abstract

Objectives Lymphoma is a common and clinically important malignancy in cats. Development of a second malignancy has been reported previously in 7–14% of cats with small-cell gastrointestinal (GI) lymphoma. The aim of our study was to describe the incidence, clinical signs, clinicopathologic data, response to therapy and outcomes in cats diagnosed with large-cell lymphoma following treatment for small-cell GI lymphoma.

Methods Medical records from a single referral specialty hospital were reviewed for all cats with lymphoma diagnosed between 2008 and 2017. The cases with a diagnosis of small-cell GI lymphoma followed by a diagnosis of any large-cell lymphoma and complete outcome data were selected for further review.

Results Seven hundred and forty cats with a diagnosis of lymphoma were identified. Twelve cats (12/121) treated for small-cell GI lymphoma followed by a diagnosis of any anatomic form of large cell lymphoma were identified. Nine cats met the study inclusion criteria and were used in analyses. Mean event-free survival time from small-cell GI lymphoma diagnosis until diagnosis of large-cell lymphoma was 543 days, with a median survival time of 615 days. Mean event-free survival time from large-cell lymphoma to death was 55 days, with a median survival time of 24.5 days. Hematocrit, albumin and total protein were significantly decreased when cats developed large-cell lymphoma compared with their values at the time of small-cell lymphoma diagnosis.

Conclusions and relevance Large-cell lymphoma occurred in 9.9% (12/121) of cats treated for small-cell GI lymphoma. Feline practitioners should include large-cell lymphoma on their list of differential diagnoses in cats diagnosed with small-cell GI lymphoma developing weight loss, anemia, hypoalbuminemia and hypoproteinemia.

¡¡GRACIAS!!