Giant Dogs, Giant Problems? Primary-care disorder burden in UK giant breed dogs, with a focus on Neoplasia.

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Background: Giant breed dogs, such as Great Danes and Alaskan Malamutes, are known for their size but also their health challenges and shorter lifespans. Understanding the demography, morbidity and mortality of giant breed dogs is crucial for improving health and welfare. Neoplasia is a leading cause of morbidity and mortality in dogs worldwide[1,3]. Giant dog breeds are reported to have a higher neoplastic prevalence compared to non-giant breeds, suggesting a genetic predisposition[3,4].

Aims: To report the demography and identify the most common causes of morbidity and mortality in giant breed dogs in the UK, with a specific focus on neoplasia.

Hypotheses: 'Female giant dogs have higher odds of a neoplasia than male giant breed dogs' and 'Giant dogs have higher odds of a dermatological mass/neoplasia compared with other body systems'.

Inclusion criteria: Giant breeds are described in literature as 'having an adult weight of >50kg and a shoulder height of >63cm'[2].

Data collection: Deidentified patient data were extracted from the VetCompass™ database. Data available included date of birth, species, breed, sex, and neuter status along with all clinical records.

Demography: The study incorporated 28,345 dogs across 28 giant breeds. The median age was 4.32 years (IQR) 1.84-7.37)). Mean adult bodyweight was 58.05kgs (IQR 53.71-64.80). The most common giant breed was Dogue de Bordeaux (n=5156, 18.19%).

Morbidity:
Overall, 7419 specific-focus level disorders were recorded during 2019 across a random sample of 4300 dogs.

The most common specific-level disorders are listed in Table 1.

Mortality:
24.81% (n=1,067) giant dogs died during 2019.
Mean age at death was 7.68 years (IQR 5.33-9.99).
Mean age at death (n=507) was 7.35 (±3.09 SD) years for females and 7.23 (±3.01 SD) years for males (n=560).
The most common reasons for mortality are listed in Table 1.

Morbidity (n=4300)			Mortality (n=1067)		
Disorder	%	95% CI	Disorder	%	95% CI
Otitis externa	4.74	4.28-5.25	Undiagnosed	44.05	41.10-47.04
Obesity	4.66	4.21-5.17	Collapsed	9.37	7.77-11.27
Aggression	3.23	2.86-3.63	Aggression	3.47	2.53-4.74
Dental Disease	3.21	2.83-3.53	Bone Neoplasm	3.19	2.29-4.42
Overgrown nails	3.11	2.74-3.53	Poor Quality of Life	2.53	1.74-3.66

Table 1: The most common specific-level disorders and reasons for mortality, from giant breed dogs, in VetCompass™ Programme, under primary veterinary care.

Disorder	%	95% CI	Disorder	%	95% CI
Skin Cyst	13.51	10.38-17.41	Mammary Neoplasm	3.97	2.40-6.51
Lipoma	8.74	6.26-12.09	Limb Mass	3.02	1.69-5.33
Skin Mass	5.88	3.90-8.79	Multiple Masses	2.86	1.58-5.13
Papilloma	4.61	2.89-7.28	Bone Neoplasia	2.72	1.47-4.93
Skin Polyp	4.29	2.64-6.89	Epulis	2.54	1.36-4.72

Table 2: The 10 most common diagnosed mass/neoplastic disorders recorded from 4, 300 giant breed dogs in the VetCompass™ Programme, under primary veterinary care.

Neoplasia:
12.47% (n=536) giant dogs were diagnosed with a mass or neoplasia [Table. 2].

277 (51.68%) were female, 259 (48.13%) were male.

The mean age of giant dogs with a diagnosis was 7.23 (±3.05) years.

Dermatologic mass/neoplasia was the most commonly diagnosed location (32.59%) [Fig. 1].

Multivariable analysis:
Odds of neoplasia compared to Dogue de Bordeaux:

Giant Schnauzers had higher odds (OR=1.79, 95% CI 1.02-3.14).

Alaskan Malamutes (OR 0.40, 95% CI 0.28-0.58) and Newfoundland Dogs (OR 0.36, 95% CI 0.22-0.57) had lower odds.

Multivariable analysis included 3 variables: age, breed, and bodyweight [Table. 3]. *Note: Table 3 does not show breed.*
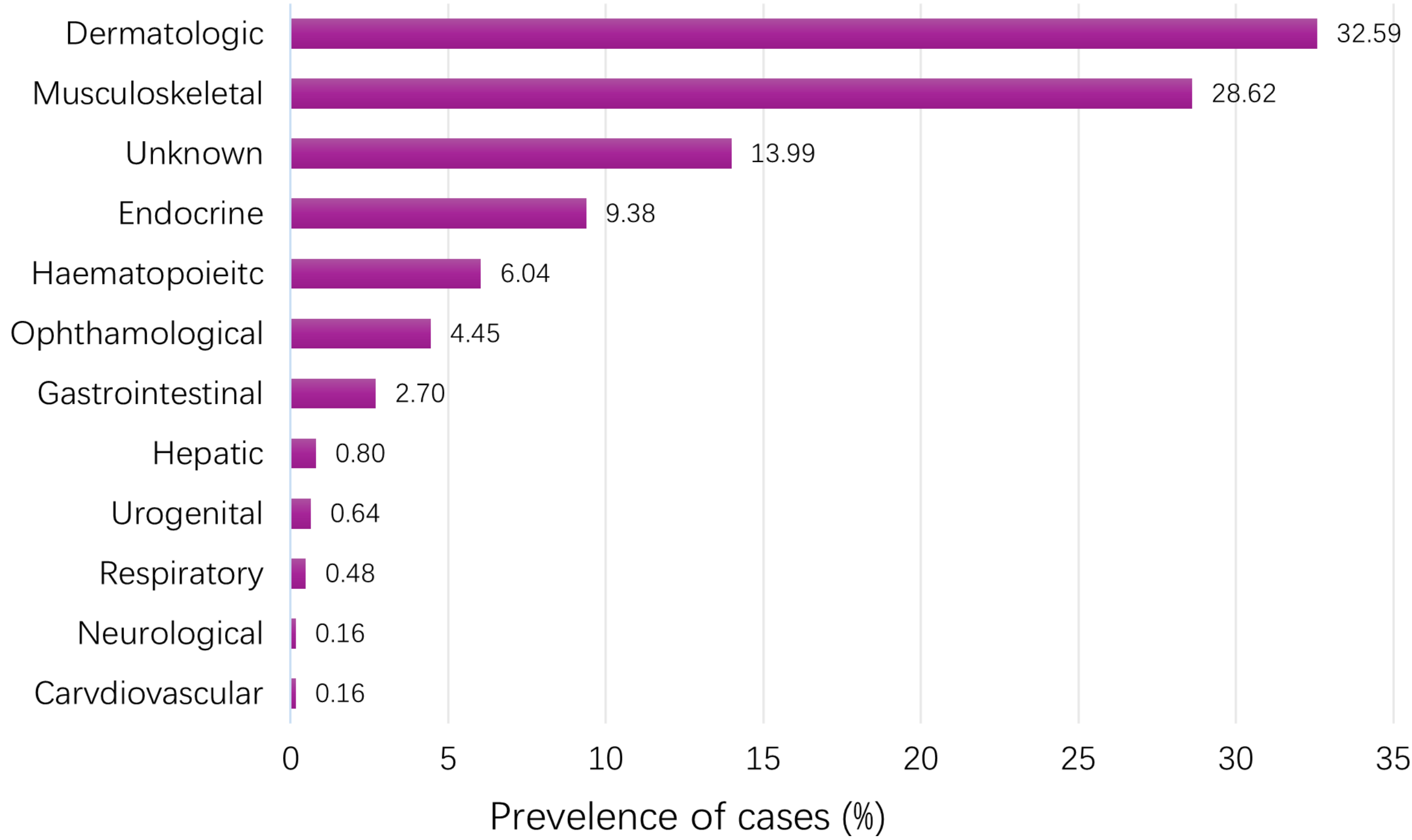

Figure 1: Body systems affected by either masses or neoplasia in giant breed dogs under primary veterinary care in the VetCompass™ Programme during 2019, in the UK.

Dermatologic — 32.59
Musculoskeletal — 28.62
Unknown — 13.99
Endocrine — 9.38
Haematopoieitc — 6.04
Ophthamological — 4.45
Gastrointestinal — 2.70
Hepatic — 0.80
Urogenital — 0.64
Respiratory — 0.48
Neurological — 0.16
Carvdiovascular — 0.16

Prevelence of cases (%)

Conclusion: High morbidity and mortality underscores the welfare importance of neoplasia in giant breed dogs. These results can assist veterinarians to update their clinical reasoning, kennel clubs to update current breed health plans, and provide useful information for breeders when selecting animals to prioritise breed health.

Variable	Category	Odds Ratio	95% CI	Category (P-value)	Variable (P-value)
Bodyweight (kg)	0 to < 40	Base			<0.001
	40 to < 60	1.11	0.82-1.50	0.488	
	60 to < 80	0.97	0.65-1.46	0.885	
	≥ 80	1.36	0.40-4.62	0.627	
	Uncategorised	0.54	0.38-0.76	<0.001	
Age (years)	< 5	Base			<0.001
	5 to < 8	3.54	2.73-4.57	<0.001	
	8 to < 12	7.37	5.70-9.54	<0.001	
	≥ 12	6.45	3.92-10.61	<0.001	
	Uncategorised	~			

Table 3: Multivariable logistic regression results for non-breed related risk factors for developing mass/neoplasia in giant breed dogs, in 2019, under primary veterinary care, in the UK.

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