

## COMMUNICATION III

### Diseases in Dogs: Necropsy Observation

#### ABSTRAK

*Kematian anjing disebabkan oleh penyakit atau keadaan tak normal terutamanya dalam sistem pansistemik, diikuti oleh sistem penghadaman dan sistem pernafasan. Dalam kategori pansistemik, kebanyakan kematian disebabkan oleh keracunan dan penyakit distemper. Penyakit utama pada sistem penghadaman adalah ancylostomiasis manakala penyakit utama pada sistem pernafasan adalah bronkopneumonia.*

#### ABSTRACT

*Morbidity in dogs was associated mainly with diseases or abnormalities in the pansystemic, digestive and respiratory systems in that order. In the pansystemic category, poisoning and canine distemper were most common. Ancylostomiasis and bronchopneumonia were the main findings in the digestive and respiratory systems respectively.*

#### INTRODUCTION

Dogs form a significant proportion of the total number of cases submitted for necropsy to the Faculty of Veterinary Medicine and Animal Science, Universiti Pertanian Malaysia (UPM). From June 1979 to August 1984, dogs made up 15.9% of the total number of carcasses submitted for necropsy (Chooi 1985). Apart from specific case reports, there has been no documentation on diseases of dogs in Malaysia. This paper summarizes the post mortem findings in dogs submitted for necropsy to UPM.

#### Materials and Methods

Necropsy records in the Faculty of Veterinary Medicine and Animal Science, UPM over the 5-year period from January 1982 to December 1986 were analysed for disease conditions in dogs. Cases submitted were either from the small animal clinic in UPM or from private practitioners in Kuala Lumpur and Petaling Jaya. Most of the cases were dead animals or animals that were euthanised because of poor prognosis. The majority were pet animals; a few were working dogs.

Carcases were subjected to a routine necropsy. Ancillary studies in histopathology, bacteriology and virology were conducted when necessary. Analysis of the cases was based on i) disease, or disease condition causing death and

ii) the reason for euthanasia. These were then classified according to body systems. Cases which were not finalised and cases with no diagnosis were not included.

#### Results and Discussion

Out of 2376 cases submitted for necropsy over the study period, dogs constituted 331 cases (13.9%). Final diagnosis was made on 219 of these 331 cases. The rest were incomplete cases. Pansystemic (18.3%), digestive (16.4%) and respiratory (13.2%) systems were most commonly the sites of disease (Table 1).

TABLE 1  
Involvement of body systems in dogs examined post mortem at UPM

System	No. of cases	(%)
Pansystemic	40	(18.3)
Digestive	36	(16.4)
Respiratory	29	(13.2)
Musculoskeletal	21	(9.6)
Cardiovascular	21	(9.6)
Renal	21	(9.6)
Nervous	12	(5.5)
Hepatic	11	(5.0)
Reproductive	10	(4.6)
Integumentary	6	(2.7)
Miscellaneous	12	(5.5)
Total	219	(100.0)

TABLE 2  
Disease conditions in the pansystemic, digestive and respiratory systems

Pansystemic			Digestive			Respiratory		
Condition	No of cases	(%)	Condition	No. of cases	(%)	Condition	No. of cases	(%)
Paraquat poisoning	10	(25.0)	Ancylostomiasis	15	(41.6)	Bronchopneumonia	14	(48.0)
Canine distemper	8	(20.0)	Parvovirus enteritis	11	(30.5)	Intersitial pneumonia	2	(7.0)
Starvation	4	(10.0)	Hemorrhagic enteritis	3	(8.3)	Fibrinous pneumonia	2	(7.0)
Organophosphate poisoning	4	(10.0)	Granulomatous esophagitis	2	(5.6)	Aspiration pneumonia	1	(3.5)
Lymphosarcoma	3	(7.5)	Acute pancreatitis	2	(5.6)	Acute pneumonia	1	(3.5)
Heat stroke	2	(5.0)	Uremic gastritis	1	(2.8)	Hemorrhagic pneumonia	1	(3.5)
Warfarin poisoning	1	(2.5)	Ulcerative gastritis	1	(2.8)	Mucopurulent rhinitis	2	(7.0)
Strychnine poisoning	1	(2.5)	Gastric torsion	1	(2.8)	Diaphragmatic hernia	1	(3.5)
Lead poisoning	1	(2.5)				Nasal carcinoma	1	(3.5)
Septicemia	1	(2.5)				Asphyxiation	3	(10.0)
Thrombocytopenic purpura	1	(2.5)				Bronchogenic carcinoma	1	(3.5)
Ehrlichiosis	2	(5.0)						
Toxoplasmosis	1	(2.5)						
Poisoning (undetermined)	1	(2.5)						
Total	40	(100.0)		36	(100.0)		29	(100.0)

TABLE 3  
Disease conditions in the musculoskeletal, renal and cardiovascular systems

Musculoskeletal			Renal			Cardiovascular		
Condition	No. of cases	(%)	Condition	No. of cases	(%)	Condition	No. of cases	(%)
Fracture (axial & appendicular)	9	(42.8)	Nephritis	13	(62.0)	Dirofilariasis	18	(85.0)
Hip dysplasia	6	(28.4)	Urolithiasis	2	(9.0)	Myocardial degeneration & necrosis	1	(5.0)
Rickets	1	(4.8)	Leptospirosis	2	(9.0)	Congestive heart failure	2	(10.0)
Arthritis	1	(4.8)	Oxalate nephrosis	1	(5.0)			
Myositis	1	(4.8)	Renal hemorrhage	1	(5.0)			
Spinal column luxation	1	(4.8)	Membranous glomerulopathy	1	(5.0)			
Fibrosis of joint	1	(4.8)	Pyelonephritis	1	(5.0)			
Osteosarcoma	1	(4.8)						
Total	21	(100.0)	Total	21	(100.0)	Total	21	(100.0)

TABLE 4  
Disease conditions in the nervous, hepatic and reproductive systems.

Nervous			Hepatic			Reproductive		
Condition	No. of cases	(%)	Condition	No. of cases	(%)	Condition	No. of cases	(%)
Meningitis	4	(33.4)	Storage disease	3	(27.0)	Transmissible venereal tumour	8	(80.0)
Spinal dural ossification	3	(25.0)	Trauma	1	(9.0)	Ovarian cyst adenocarcinoma	1	(10.0)
Degenerative myelopathy	2	(16.7)	Jaundice	1	(9.0)	Stillbirth	1	(10.0)
Spinal cord hemorrhage	1	(8.3)	Congestion	1	(9.0)			
Cerebral focal necrosis	1	(8.3)	Hepatitis	2	(18.5)			
Intervertebral disc prolapse	1	(8.3)	Hepatocellular carcinoma	1	(9.0)			
Total	12	(100.0)		11	(100.0)		10	(100.0)

Of the 40 cases classified under pansystemic, 18(45%) were cases of poisoning (Table 2). Ten of these were due to paraquat; six of which have been described elsewhere (Chooi & Ibrahim 1985; Chooi *et al* 1986). Canine distemper accounted for 20% (8) of the pansystemic diseases. The low prevalence is probably because most pet dogs and all working dogs are vaccinated against canine distemper which is enzootic in this area. Death occurs mainly in non-vaccinated or improperly vaccinated animals.

In the digestive system, ancylostomiasis was most common followed by parvovirus enteritis (Table 2). Cases of parvovirus infection have been reported elsewhere (Noor *et al*. 1980; Omar *et al*. 1980; Sheikh-Omar *et al*. 1985). Three cases of hemorrhagic enteritis not due to parvovirus infection were diagnosed. One of these was due to clostridial infection (Chooi & Netto 1986) while the cause of the other two cases was undetermined. Granulomatous esophagitis due to *Spirocerca lupi* infestation was found in two dogs.

Bronchopneumonia accounted for 48% of the cases in the respiratory system. Bacteria isolated included *Staphylococcus* and *Klebsiella* species. There was a likelihood that these cases were secondary to viral infections although histological examination of the lung in most cases failed to reveal inclusion bodies.

Fractures of the axial and appendicular skeleton were caused by trauma - usually in road accidents. These animals, and those with hip dysplasia, were usually euthanised because of poor prognosis. Dirofilariasis was the major problem in the cardiovascular system whilst subacute to chronic interstitial nephritis was the main reason for euthanasia or death in the renal system (Table 3).

In the reproductive system, transmissible venereal tumour (TVT) was the major reason for euthanasia (Table 4). Chooi (1985) reported that TVT was the most common tumour type in dogs and 91.7% of cases in that report involved the penis or vagina. In addition, tumours of the mesenchyme, skin and adnexa were of low prevalence in the present study because these cases were usually submitted in the form of biopsies, and were not included here.

There were four cases of meningitis in the nervous system. Two of these were suppurative. The first case was an 8-week old, female spitz. The dog was depressed and had nystagmus prior to death. *Staphylococcus aureus* was recovered from the meninges. The second case of suppurative meningitis was in a 1-year old male German Shepherd crossed dog. There was obvious inflammation of the meninges with adhesions to the cranium at gross examination. The other two cases were non-suppurative but further deductions were not possible due to autolysis of the brain.

TABLE 5  
Disease conditions in the integumentary system and miscellaneous conditions

Integumentary		Miscellaneous	
Condition	No. of cases	Condition	No. of cases
Mast cell tumour	1	Anaesthetic death	3
Chronic demodecosis	1	Sudden death	2
Histiocytoma	1	Abdominal rupture (post laparotomy)	1
Dermatitis	1	Lymphadenopathy	1
Squamous cell carcinoma	1	Anaemia	1
Pediculosis	1	Otitis externa	1
		Acute hemorrhage (post-spay)	1
		Bilateral cataract	1
		Hyperparathyroidism	1
Total	6		12

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K.F. CHOOI,  
T. PANDIYARAJA  
A.R. SHEIKH-OMAR

*Faculty of Veterinary Medicine and Animal  
Science,  
Universiti Pertanian Malaysia,  
43400 UPM Serdang, Selangor Darul Ehsan,  
Malaysia.*

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