Abbey Veterinary Services
DIAGNOSTIC HISTOPATHOLOGY AND CYTOLOGY

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CASE OF INTEREST

A case of haemorrhagic canine gastroenteritis in a Boxer dog.

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Case donated by Lucy Genovese, Veterinary Pathologist.

A six year old Boxer dog was presented due to sudden collapse with a marked tachyarrythmia, mucous membrane pallor with a mucous membrane capillary refill time of 2 seconds. The dog died within a short time after presentation shortly after intravenous catheterisation.

A necropsy was performed soon after death. Bloodstained, foul-smelling but fluid faeces were found on initial examination. On opening the stomach there was an area of gastric mucosal haemorrhage. Within the small and large intestine (primarily in the duodenum and jejunum) a thick fibrinonecrotic and haemorrhagic exudate was found. Petecchial haemorrhages were found diffusely on the epicardium and within the myocardium. Sections of tissue were submitted for histopathological examination.

Histological examination of the tissues identified lesions limited to the small and large intestine and heart. In the colon there was focal to focally extensive necrosis of the superficial lamina propria. Haemorrhage was present and extended from the surface into the lamina propria, vessels were engorged and a number contained fibrin thrombi. Large numbers of bacteria covered denuded, partly necrotic surface of the mucosa. A Gram stain indicated these to be almost a pure population of Gram positive bacilli. Inflammatory infiltrates within the mucosa and submucosa were minimal (residual mononuclear cells). The deeper proprial tissue was intact. Some crypts contained a small amount of cellular debris. Vessels within the submucosa displayed moderate dilatation and congestion. There was milder vascular dilatation within the tunica muscularis.

Within the duodenum and ileum there was loss of villus architecture. The tips of the villi were necrotic and covered by a heavy mass of bacteria of similar appearance to that in the colon. Low numbers of neutrophils were present within the superficial necrotic tissue and occasional fibrin thrombi were evident within vessels. The degree of congestion and necrosis was less severe in the small intestinal samples.

Figure 1. Histological section of the large intestine displaying marked mucosal necrosis and lamina proprial haemorrhage and submucosal congestion. (x2.5 obj.). HE Stain.

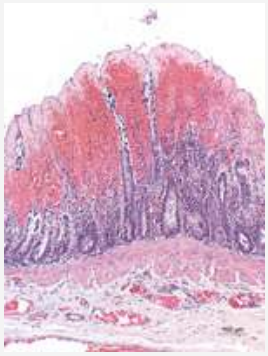

Figure 2. Histological section of a groups of crypts displaying necrosis, haemorrhage and a basophilic line covering the necrotic mucosal surface (bacteria). (x5 obj.). HE Stain.

There were colonies of bacteria visible on the ulcerated surface but on staining with Gram moderate numbers of Gram positive cocoid intracellular and extracellular bacteria were observed.

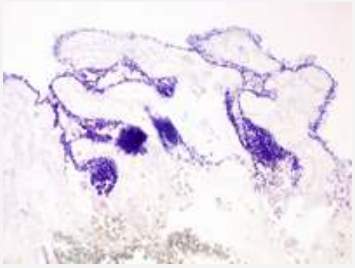

Figure 3. Histological section of the the colonic mucosa covered in multiple Gram positive rod-shaped bacteria (x10 obj.). Gram Stain.

Sections of myocardium from the right ventricle identified a mild increase in subendocardial fibrous tissue. There is multifocal replacement of myofibres by fat. This varied from clusters of individual lipocytes to focally extensive areas of myocardial fat replacement. In the right atrium changes were very similar. Mild epicardial fibrosis was present with a mild accumualtion of mononuclear inflammatory cells, including some lymphocytes and macrophages, occasionally present around blood vessels and focally mildly extending into muscle.

In this issue:

JOURNAL Articles(with e-links)

1. Esplin DG. Survival of dogs following surgical excision of histologically well-differentiated melanocytic neoplasms of the mucous membranes of the lips and oral cavity. Vet Pathol. 2008 Nov;45(6):889-96.Link

Postsurgical follow-up information was obtained on 64 dogs with 69 histologically well-differentiated melanocytic neoplasms that involved the mucous membranes of the lips and oral cavity. The patients received no adjunct therapy. Sixty one of 64 dogs (95%) were alive at the end of the study or had died of causes unrelated to the tumor, with a mean survival of 23.4 months and a median survival of 34 months after surgery. Twenty-eight dogs alive at the end of the study had a mean survival of 31.3 months after surgery. There were 2 dogs, which had recurrent tumors, that were still alive at the end of the study. All dogs that died of tumor-related causes (3) and all dogs with recurrent tumors (2) had tumors in the oral cavity. Results of this study indicate that a favorable clinical course and prolonged survival can be expected in most dogs with histologically well-differentiated melanocytic neoplasms of the mucous membranes of the lips and oral cavity, with only local excision of the lesions and no adjunct therapy.

2. Hibbert A, Gruffydd-Jones T, Barrett EL, Day MJ, Harvey AM. J Feline Med Surg. 2008 Oct 2. Feline thyroid carcinoma: diagnosis and response to high-dose radioactive iodine treatment. Link

This study reports the scintigraphy, histopathology, sole treatment with high-dose radioactive iodine and outcome of eight cases of feline thyroid carcinoma. Scintigraphic findings were variable and in 7/8 cases scintigraphic features could not reliably distinguish whether the thyroid tissue was malignant. Histopathology revealed typical criteria of malignancy in all cases, with mitotic activity described most frequently (7/8 cases), followed by infiltration of local tissues (4/8 cases). Cellular pleomorphism was infrequently observed. Single high-dose (1100MBq I(131)) radioiodine therapy was successful in 6/8 cases, with complete resolution of hyperthyroidism, and was associated with prolonged survival times (181-2381 days). Sole treatment with high-dose radioiodine is a safe and effective treatment for functional thyroid carcinoma. The prognosis for feline thyroid carcinoma successfully treated with radioiodine is good, with extended survival times commonly achieved.

3. Busch MD, Reilly CM, Luff JA, Moore PF. Feline pulmonary Langerhans cell histiocytosis with multiorgan involvement. Vet Pathol. 2008 Nov;45(6):816-24.Link

Histiocytic proliferative diseases are uncommon in cats, although recently a progressive histiocytosis of the skin with terminal involvement of internal organs has been described in cats. Here we describe 3

The severe haemorrhagic and necrotising enterocolitis, which was most severe in the colon was consistent with haemorrhagic canine gastroenteritis which is a sporadic per-acute haemorrhagic disease. The exact pathogenesis is not well understood but *Clostridium Perfringens* type A (some of them enterotoxin producing) has been identified in some cases. The disease is per-acute and dogs are often found dead. All of the intestine appears lined by a very heavy, almost pure growth of large bacilli and, given the well preserved nature of the samples and lack of evidence of autolysis, the presence of these organisms was regarded as clinically significant although culture and typing would be required for their definitive identification.

Microscopically this case is typical in that necrohaemorrhagic lesions are present within the gastrointestinal mucosa, which extends from the lumenal surface into the lamina propria. The bacteria, Clostridia, covers the necrotic tissue but does not invade it. Recurrent diarrhoea, sometimes bloody, has been associated with entero-toxin secreting type A strains. Multiple serotypes of Clostridia have been associated with nosocomial, usually non-fatal, cases of diarrhoea in dogs.

The cardiac lesion present in this dog was deemed to be a cardiomyopathy. There was fatty replacement of muscle within the atria and the right ventricle. There is a variant of dilated cardiomyopathy described in Boxer dogs, termed arrhythmogenic right ventricular cardiomyopathy. Right ventricular dilatation or aneurysms are common. Arrhythmias are also common and the condition is associated with sudden death. Mild non suppurative myocarditis has also been reported with this syndrome and was present to a very limited extent. Shock and electrolyte abnormalities associated with the severe haemorrhagic intestinal lesion likely contributed to arrhythmia and cardiac failure in this dog.

References:

1. Brown, CC. et al: Alimentary system. In: Pathology of Domestic Animals, eds. Jubb KVF, Kennedy PC, Palmer N, 5th ed., vol. 3, pp. 215-215. Elsevier Ltd, New York. 2007.

2. Sasaki J, Goryo M, Asahina M, Makara M, Shishido S, Okada K. Hemorrhagic enteritis associated with Clostridium perfringens type A in a dog. J Vet Med Sci. 1999 Feb;61(2):175-7.

3. Weese JS, Greenwood SJ, Staempfli HR. Recurrent diarrhea associated with enterotoxigenic Clostridium perfringens in 2 dogs. Can Vet J. 2001 Apr;42(4):292-4.

cats (2 males and 1 female) with pulmonary Langerhans cell histiocytosis (PLCH). The cats were euthanized due to progressive respiratory clinical symptoms and deterioration. Macroscopically, extensive, multifocal to confluent, pulmonary masses were evident. Infiltration of pancreas (2 cats), kidneys (1 cat), liver (1 cat), as well as tracheobronchial, hepatosplenic, or mesenteric lymph nodes (2 cats) was observed by gross or microscopic examination. The infiltrating cells had histiocytic morphology with cytologic atypia characterized by anisokaryosis and hyperchromasia regionally within infiltrated tissues. Lesional histiocytes expressed vimentin, CD18, and E-cadherin. Expression of E-cadherin was usually markedly reduced in extra-pulmonary lesions, which is consistent with possible down-regulation of E-cadherin associated with distant migration from the lung. Transmission electron microscopy demonstrated intracytoplasmic organelles consistent with Birbeck's granules of Langerhans cells in the lesional histiocytes in all cats, except in the pancreas of one cat. These findings were compatible PLCH with limited organ involvement of humans. It remains unproven whether feline PLCH represents a reactive or neoplastic cell proliferation.

LATEST NEWS

Government funds UK consortium to develop foot and mouth field test based on Stratophase biodetection.

A portable test being developed by biodetection expert Stratophase could soon enable farmers and vets to accurately detect highly contagious diseases such as bovine TB and foot and mouth in the field, reducing false alarms and containment time and enabling remedial action to be taken more quickly.

The sensor system will collect pathogens from the air and put them into a liquid stream. The liquid will then be analysed 'in the field' using Stratophase's optical sensor technology. The optical chips are coated with antibodies designed to attract specific antigens, such as those for TB or foot and mouth. If the targeted agent is present, it sticks to the surface and the chip undergoes a detectable change in optical spectrum, confirming the presence of the disease.

Additional info: External Link

SIDE STORY

Protecting the travelling pet.

With an increasing number of vets now regularly dealing with pets that have travelled abroad and returned infected with diseases such as Leishmaniosis and Babesiosis, the BVA Animal Welfare Foundation has relaunched its advisory leaflet 'Taking your pets abroad - your guide to diseases encountered abroad'.

It is obvious that travelling with a pet needs careful planning well in advance For example, to comply with rabies regulations owners need to get their pet vaccinated and then blood sampled to check that adequate immunity has developed. Six full months must then pass before the pet would be allowed to come back to the UK following a trip abroad.

The BVA are trying to encourage pet owners to make good use of this time to research the possible health problems associated with their holiday destination, both for them and their pet, and to ensure that pets and people alike are then protected against the various diseases they could encounter.

The leaflet outlines some of the more common diseases of pets that can be encountered outside the UK along with details of measures that can be taken to prevent them. It also explains the criteria that animals must meet under the UK's Pet Travel Scheme as well as a reminder of the importance of contacting your vet should your pet develop any illness on their return to the UK.

For further information on the Donkey Sanctuary visit wwwww.bva-awf.org.uk.

NECROPSY TIPS

Removal of the Brain

• Remove major mucle masses from the dorsal and caudal skull to expose the underlying bone and inspect the foramen magnum for any abnormalities in the vermis.

• Make a horizonal cut into the skull (along the dotted lines - see below) with a saw or bone cutters (the latter can be used by nibbling the skull from the outside) into the frontal bone. Two sagittal cuts are then made just medial to the occipital condyle (with each cut ending into the foramen magnum)

• Remnants of the tentorium should be removed with the exposed dura mater, the skull inverted in one hand and then the cranial nerves and the base of the pituitary gland cut with scissors. The frontal lobes should be gently prised out and the brain should slide into the hand.

• The pituitary gland is removed by cutting the dura around the gland and removing it gently from the fossa beneath.

MESSAGES

SEMINARS

We have recently been asked to give clinicopathological and pathological seminars by groups of practices and specialist groups.

If you have a request for us to give a talk on a particular subject, especially if you are have a specialist interest or are a member of a specialist referral centre we would like to hear from you.

We have a team of very experienced pathologists with a broad knowledge of disease in a wide variety of animals. Many of our pathologists are accustomed at presenting talks. Just Let us know!

CREDIT CRUNCH...

You may have noticed we have not raised our prices this year. We understand that your clients may be finding it a difficult time and we do not want cost to prevent their animals from getting a histologically confirmed diagnosis!

OUR DETAILS

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Where we are: Multimap Link

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