Awanui Veterinary

Pathology in focus

March 2025

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An unusual finding in a bloated dog

Bernie Vaatstra

Clinical findings

A 13-year-old, spayed female Lhasa Apso presented at an after-hours veterinary clinic for acute gastric dilatation. Prior history included several years of upper gastrointestinal signs including intermittent vomiting and inappetence. Clinical signs improved on institution of treatment with 10mg omeprazole SID in 2023, and remained stable until October 2024, when the dog presented with moderate gastric bloating which resolved after treatment with maropitant citrate 1mg/kg. The dog then presented acutely with marked gastric dilatation in late January, 2025.

On admission to the veterinary hospital, the stomach was decompressed but bloated again the following day. Based on imaging suggestive of a gastric foreign body, exploratory laparotomy was undertaken. Gravel was removed from the stomach, but no foreign bodies large enough to explain pyloric obstruction. There was no evidence of pyloric hypertrophy or neoplasia and there were no significant gross findings in the remainder of the gastrointestinal tract. Biopsies were collected from the stomach and duodenum to look for potential underlying causes.

The dog recovered after surgery and remained stable at the time of follow-up 3 weeks later.

Pathology

Histological findings included oedema and haemorrhage of the stomach wall attributed to trauma caused by gastric distention and/or foreign material (Figure 1). There was mild lymphoplasmacytic and eosinophilic inflammation which was considered equivocal for underlying inflammatory bowel disease. In addition, there were numerous distinctive large coccoid bacteria occurring in small clusters (2-8 cells) located within the

Figure 1. Gastric biopsy showing mucosa (M), submucosa (SM) and muscularis externa (ME). The submucosa is oedematous and congested. H&E 20x.

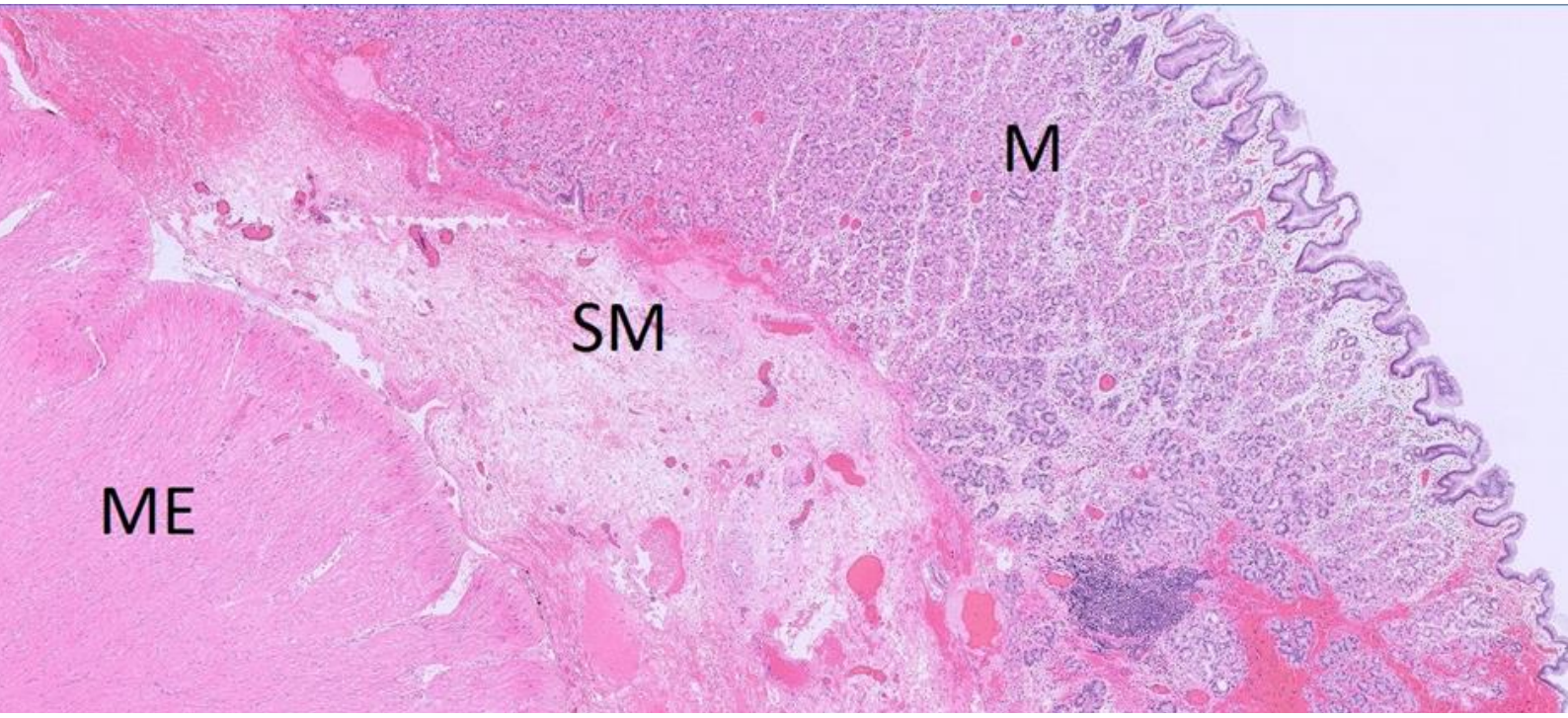
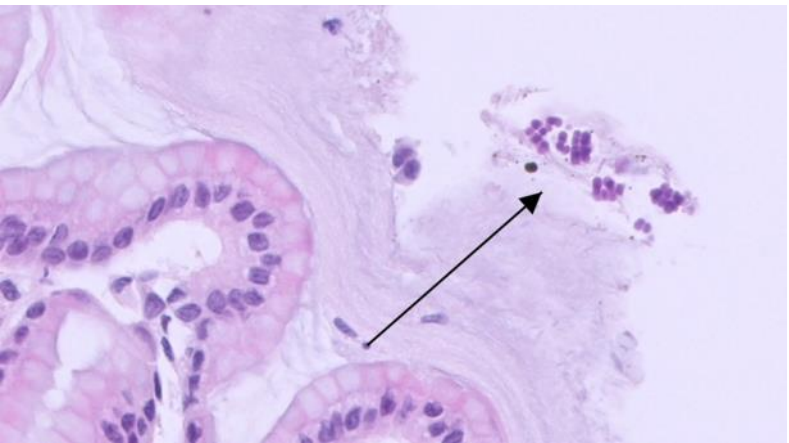
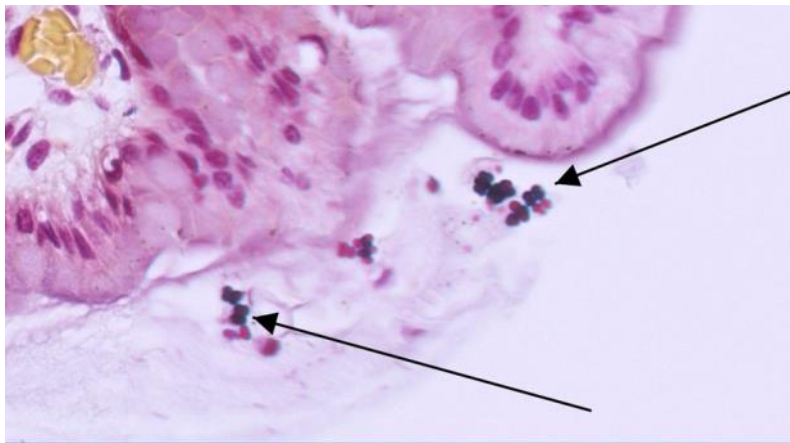


Figure 2 (below left). Gastric biopsy showing mucus layer with large coccoid bacteria in packets of 4-8 cells (Sarcina sp.) H&E, 600x.
Figure 3 (below right). Gastric biopsy showing large Gram-positive coccoid bacteria. Gram's stain, 600x.





mucus layer (Figure 2). The organisms were Gram and PAS positive (Figure 3). Morphologically, the bacteria resembled *Sarcina* spp. (*Sarcina ventriculi, Clostridium ventriculi*).

Discussion

Sarcina-like bacteria are very rarely seen in canine gastric biopsies. One report details a possible association between *Sarcina ventriculi* and gastric dilatation in two dogs (Vatn et al. 2000). More commonly, *Sarcina* spp. are observed in abomasal biopsies from calves and lambs dying of acute abomasal bloat (Edwards et al. 2008). In humans, *Sarcina ventriculi* is associated with rare cases of delayed gastric emptying, gastric distension, dyspepsia, ulceration and perforation, with a mortality rate of 14%. Conditions that promote overgrowth include diabetic gastroparesis, pyloric stenosis, and gastric surgery (Tartaglia et al. 2022).

Proton pump inhibitors (PPIs) such as omeprazole are widely used in both human and veterinary medicine and considered safe and effective for treatment of a range of upper GI disorders (notably, GERD). However, long term use does increase the risk of adverse side effects. Evidence shows that PPIs alter the GI microbiome and may increase the risk of infections such as *Clostridium difficile*. They may also increase the risk of hyperplastic and neoplastic gastric disorders due to hypergastrinemia. Similar to the situation in humans, omeprazole use is known to alter GI bacterial microbiota in dogs (Garcia-Mazcorro et al. 2012).

In the present case, gastric biopsy revealed a possible opportunistic role for *Sarcina* spp. in gastric dilatation in a dog. While a clear cause cannot be concluded, long term use of omeprazole along with underlying IBD, gastric foreign body, and stomach surgery are factors that could potentially promote gastrointestinal dysbiosis and overgrowth of gas-producing *Sarcina* spp.

Acknowledgements to Tom Taylor from Estuary Veterinary Clinic for this case submission and detailed clinical history.

References

Edwards GT, Woodger NG, Barlow AM, Bell SJ, Harwood DG, Otter A, Wight AR. *Sarcina*-like bacteria associated with bloat in young lambs and calves. *Vet Rec*. 163:391-3, 2008.

Garcia-Mazcorro JF, Suchodolski JS, Jones KR, Clark-Price SC, Dowd SE, Minamoto Y, Markel M, Steiner JM, Dossin O. Effect of the proton pump inhibitor omeprazole on the gastrointestinal bacterial microbiota of healthy dogs. *FEMS Microbiol Ecol.* 80:624-36, 2012.

Tartaglia D, Coccolini F, Mazzoni A, Strambi S, Cicuttin E, Cremonini C, Taddei G, Puglisi AG, Ugolini C, Di Stefano I, Basolo F, Chiarugi M. *Sarcina ventriculi* infection: a rare but fearsome event. A Systematic Review of the Literature. *Int J Infect Dis*. 115:48-61, 2022.

Vatn S, Gunnes G, Nybø K, Juul HM. Possible involvement of *Sarcina ventriculi* in canine and equine acute gastric dilatation. *Acta Vet Scand.* 41:333-7, 2000.

Pathologist spotlight

Bernie has been a diagnostic pathologist with our team since 2011 and is now part of the furniture. He graduated from Massey University with a BVSc (dist.) in 2004 and then spent 5 varied and interesting years in mixed clinical practice in South Otago. This was followed by a residency in anatomic pathology (back at Massey) in 2009-2010, leading to board certification in 2012 and specialization as a veterinary anatomic pathologist.

Bernie has expertise across all aspects of diagnostic pathology with particular interests in production animal pathology and companion animal surgical pathology. He enjoys helping vets troubleshoot diagnostic dilemmas and farm health issues and collaborating with colleagues to provide the most clinically useful diagnosis possible. In recent years, this includes increasing use of digital pathology, immunohistochemistry and molecular testing.

Bernie also enjoys contributing to scientific articles, teaching and mentoring veterinarians and pathologists, and contributing to a number of committees (BVD Steering Group, NZ Society for Veterinary Pathology, Bovine Digital Dermatitis Steering Group).

Spindle cells

Cathy Harvey

Of all the masses that occur in the skin and subcutis, probably the most care needs to be taken when evaluating spindle cells from mass lesions, as reactive spindle cells associated with fibroplasia cannot be easily distinguished from neoplastic cells on cytology. Often these lesions are firm and do not exfoliate well, making diagnosis even more problematic to make a definitive diagnosis on cytology.

Moderate to large sized spindle cells can be present in areas of granulation tissue proliferation, fibrosis in lesions such as injection site and foreign body reactions, as well as spindle cell neoplasms. Confirming a lesion as a mesenchymal neoplasm therefore almost always requires histopathology. This is particularly true if any admixed inflammation is present. A history of progressive growth, infiltrative behaviour, and irregular mass borders, along with the lack of inflammatory cells, should increase suspicion of a neoplastic process.

Mesenchymal tumours can have benign (e.g. fibroma) and malignant (e.g. fibrosarcoma) forms and can have variable cell morphology in different areas of the mass. Unless marked cytologic atypia exists, making this distinction requires histopathology.

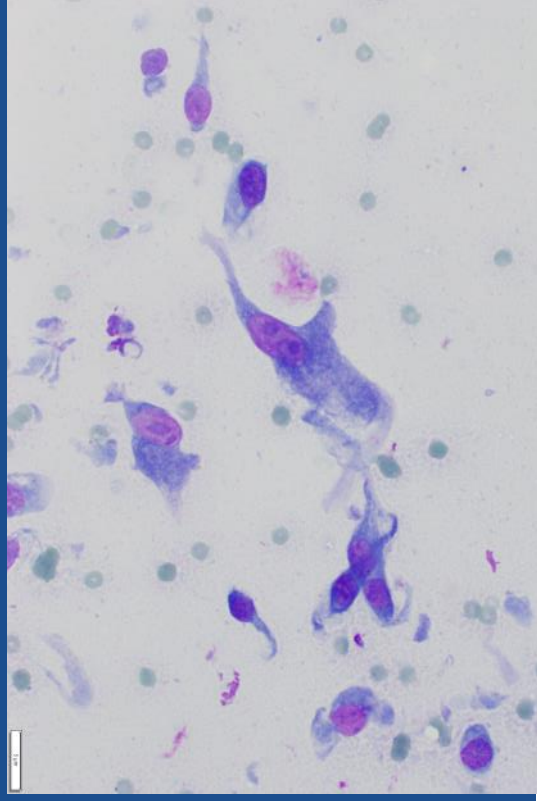


Figure 1 - Cytology of spindle cells (Diff Quik 500x).

Reference:

Valenciano AC, Cowell RL. Cutaneous and Subcutaneous Lesions. In Cowell and Tyler's (eds) *Diagnostic Cytology and haematology of the Dog and Cat.* 5th Edtn. Pp 74-100, Elsevier Inc., 2020.

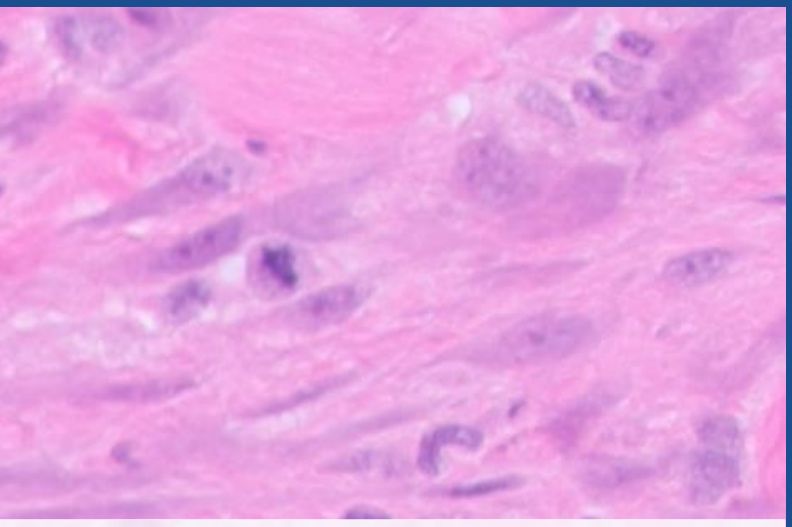


Figure 2 - Histology of granulation tissue with mitotic (H&E 400x).

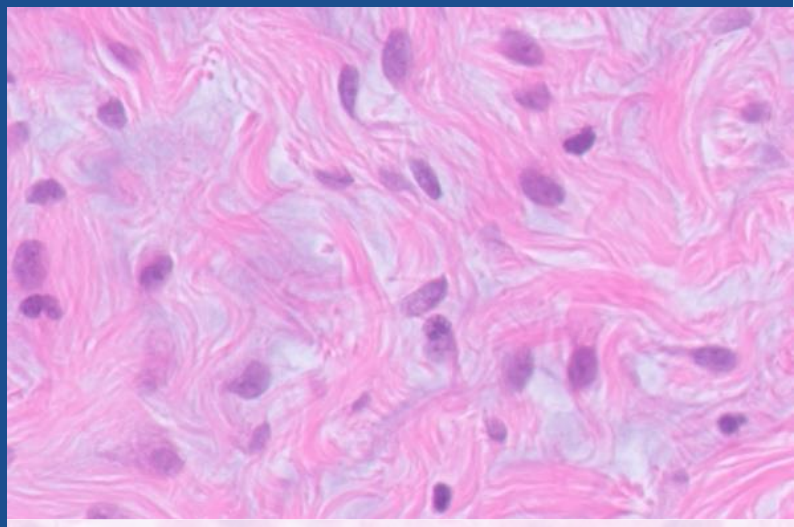


Figure 3 - Histology of spindle cell neoplasia low grade (H&E 400x).

Figure 4 - Histology of spindle cells and blood vessel in mature granulation tissue – fibrosis (H&E 400x).

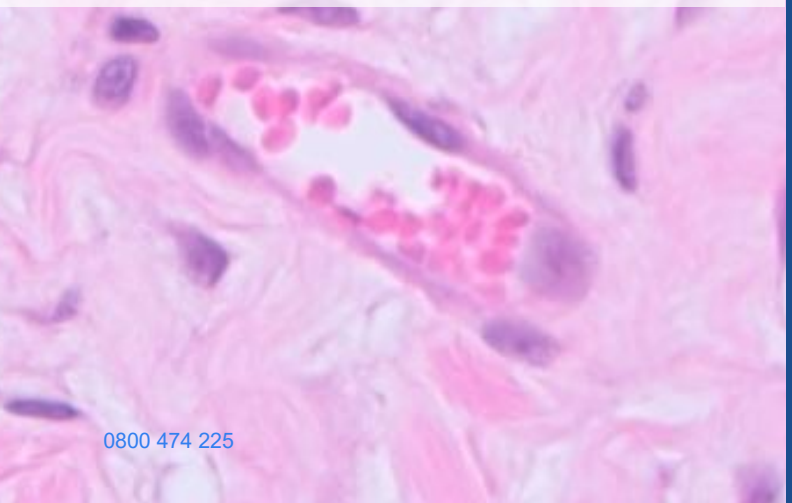
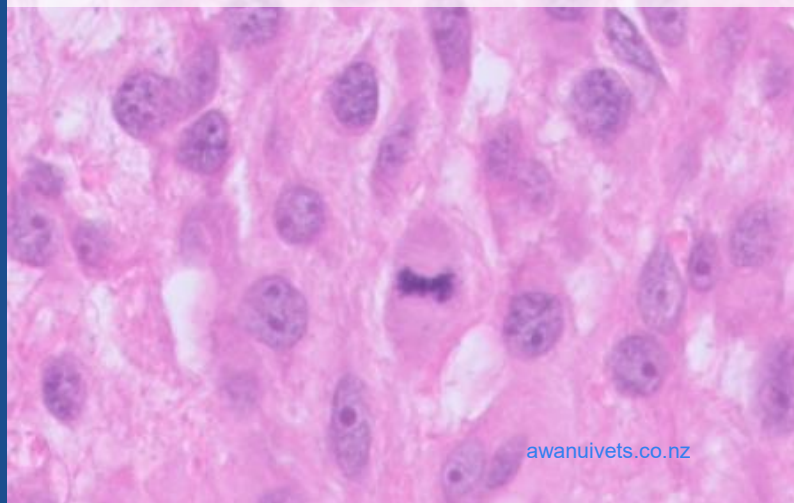


Figure 5 - Histology of soft tissue sarcoma with mitotic figure (H&E 400x).



Fees for credit card payments

In case you missed our email last week, we are no longer able to absorb the merchant fee associated with credit card payments. As a result, we will be passing this cost on to our customers at a rate of 2.5%, effective for payments made on or after March 1, 2025.

If you wish to cancel your payment by credit card please email karen.cooper@awanuigroup.co.nz and we can advise our accounts department.

Payments made via direct debit will still be completely free of charge. You can find the details for direct debit payments below and at the bottom of all your invoices.

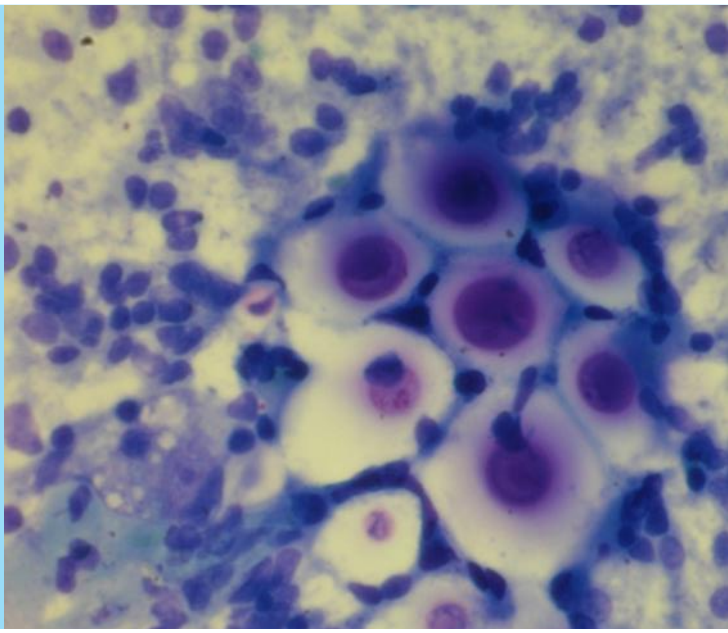
Bank: ANZ
BSB: 01-0102
Account No.: 0291961 00
Swift Code: ANZBNZ22

Thank you for your understanding. Should you have any questions or concerns, please feel free to contact your local laboratory manager.

Down the ‘scope

Smears were received from a cat with an enlarged submandibular lymph node unilaterally for one month, and inspiratory dyspnoea. Nothing abnormal was detected on exam of pharynx/larynx under general anaesthetic, however several firmly enlarged lymph nodes were found on the left hand side.

This is what we saw on cytology. What do you think is the culprit? (Answer posted on last page)



PMSG testing issue

We have encountered an issue with our current batch of PMSG testing kits. The supplier has been notified, but unfortunately, they are unable to provide replacements as the kits are out of stock. A new batch is expected to be ready in April and will be shipped to us from Germany.

Until the new kits arrive, we will be unable to offer PMSG testing. The expected delivery of the kits is between mid to late May. As the exclusive provider of this test in New Zealand, we are actively exploring alternative testing options and will keep you informed of any new developments.

In the interim, we recommend performing an Oestrone sulphate test at >100 days instead.

We apologize for any inconvenience caused by this unexpected issue. If you have any questions or concerns, please don’t hesitate to contact your local laboratory.

Image by Unsplash

In brief

- **Our new price book** is in effect from 1 March, so please ensure the pricing in your practice management system has been updated to reflect this. If you missed out on getting a electronic copy of our new price book, please contact karen.cooper@awanuigroup.co.nz and you will be sent a copy by email.
- **EzyVet SDI users** please ensure you update your pricing if it wasn't automatically set to update. All other ezyVet users, you will need to update pricing details manually. If you wish to change to the SDI integration, please contact ezyVet directly.
- It is **Otago anniversary day** on Monday 24 March. Our Dunedin laboratory will be open normal hours on Saturday 22 March, but will be closed on Monday 24 March for the public holiday.
- **Our new liver fluke-specific antigen ELISA** detects infection though an ELISA on faecal samples. It can yield a positive results even outside the fluke's egg-laying period, and unlike the serum antibody test, this faecal antigen ELISA will only test positive if flukes are present in the bile duct. Pricing and sample details can be found in our new price book.
- *Campylobacter jejuni* antibody testing is now price on application as the subcontractor has changed the price structure for this testing dependent on the number of samples submitted.

From page 5: **Down the 'scope answer** - Encapsulated yeasts (see lovely halo around the yeast cells) indicates *Cryptococcus* spp. infection.

Contact us

- contacting Awanui Veterinary couldn't be easier.

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