THE UNIVERSITY OF MELBOURNE

FACULTY OF VETERINARY & AGRICULTURAL SCIENCES

VETERINARY BIOSCIENCE: DIGESTIVE SYSTEM

Suki the Cat

Case Study 4
Wrap-Up Session
May 11, 2023

History….

Having taken a history with Mrs Abrahams, what **key information** had you collected?

On the basis of this information what did you decide was **Suki's main presenting problem(s)**?

What **hypotheses** did you develop to explain the problem(s)? (Hypotheses are your differential diagnosis list)

Possible hypothesis

Worm burden → intestinal damage → shortened villi → failure to a absorb nutrients despite normal appetite → **weight loss / diarrhoea**

ALSO

Worm burden→ intestinal inflammation→ visceral afferent signals→ vomiting centre → **vomiting**

Clinical examination may help us to refine our differential list….

“A large amount of foul smelling diarrhoea”

What can the nature of diarrhoea tell us about its likely causation?

If we understand **what** is normally absorbed and **where**, it can help us to identify the cause of the diarrhoea

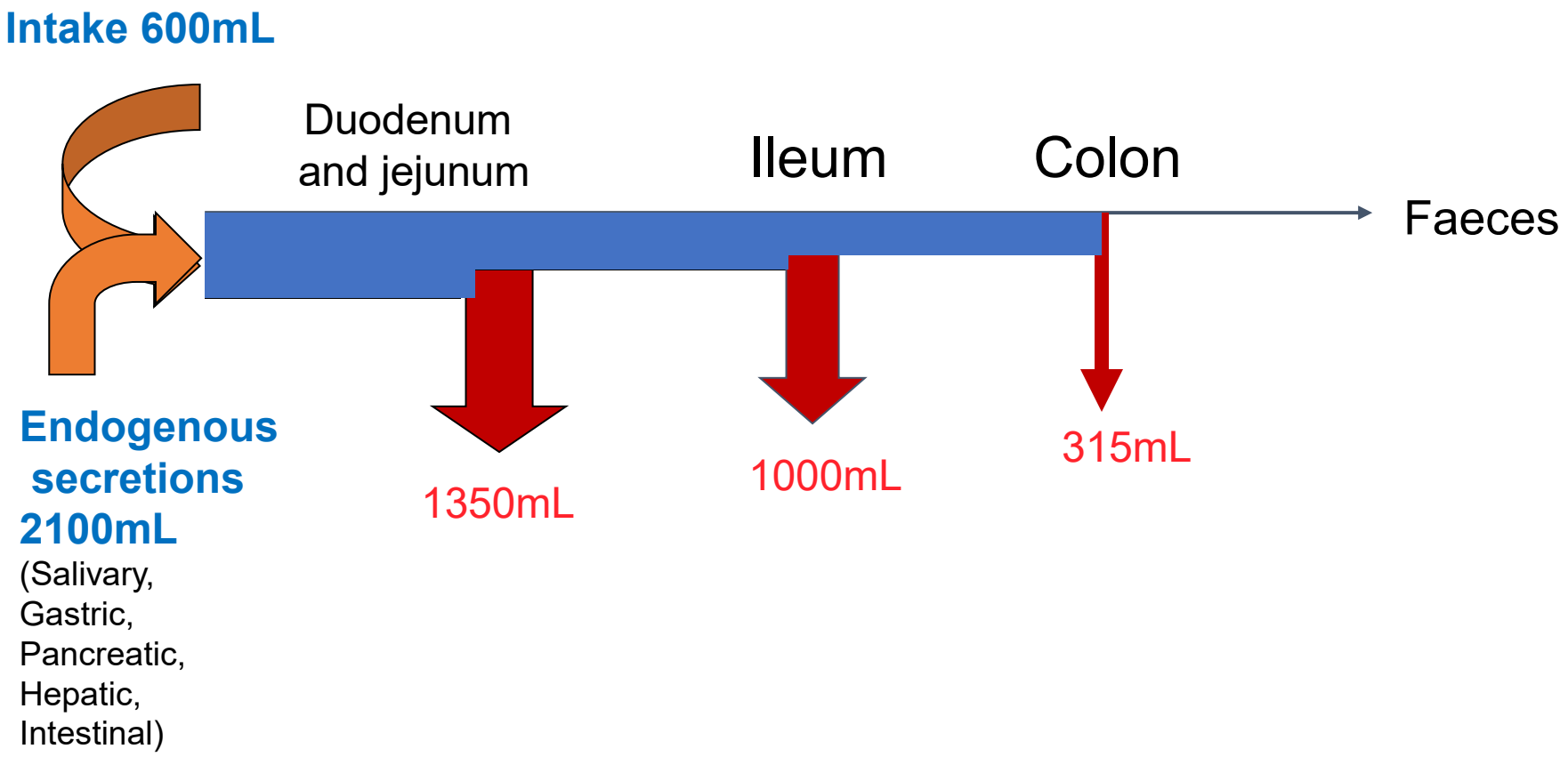
Digestion and absorption

- Some malabsorption scenarios:
- WHERE is the dysfunction?

WHERE is the dysfunction?

- Sudden onset of profuse watery diarrhea
- Increased volume of pale soft faeces
- Chronic diarrhoea with pale fluid faeces (and loss of body condition)
- Increased frequency of soft mucoid faeces flecked with blood

Regional Daily Net Water Turnover in Canine GI Tract



PERCENT of Total	50%	37%	12%
PERCENT efficiency	50%	75%	90%

WHERE is the dysfunction?

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What provides the normal colour to faeces?

- Breakdown products of bilirubin. (stercobilin)

… and what could change that colour?

- Presence or absence of dietary fat
- Presence or absence of stercobilin

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Where does most nutrient absorption occur?

- What can we learn from faecal examination?
  - Fat droplets
  - Undigested muscle fibres

- And what about specific micronutrients?
  - Eg cobalamin levels in Suki?

Folate and Cobalamin (Vit B12)

- Specific folate carriers located in mid small intestine
- Specific cobalamin carriers located in distal SI (ileum)
- Requires binding to intrinsic factor that is secreted by parietal cells of the stomach

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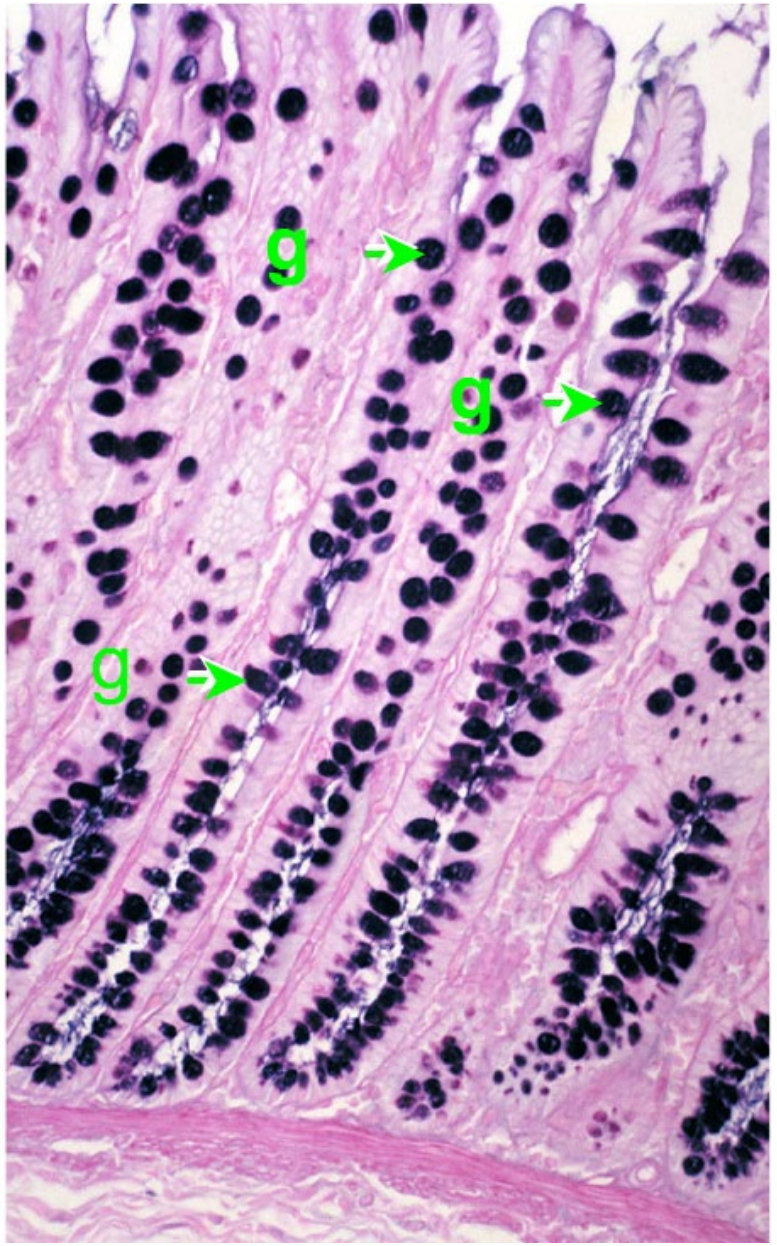
Large Intestine

- Large amounts of mucus are secreted in the colon
- Inflammation of the colon results in excessive mucus secretion
- (but not much change in fluid content as most water absorbed in SI)
- Often straining (urgency) due to inflammatory stimulation of nerve endings



Delman's Textbook of Veterinary Histology, 6th Ed.

Having conducted a physical examination, how did your refine your hypothesis(es)?

What further clinical tests would be of greatest value in refining your hypothesis?

Why?

Can you explain what each test would rule in/rule out?

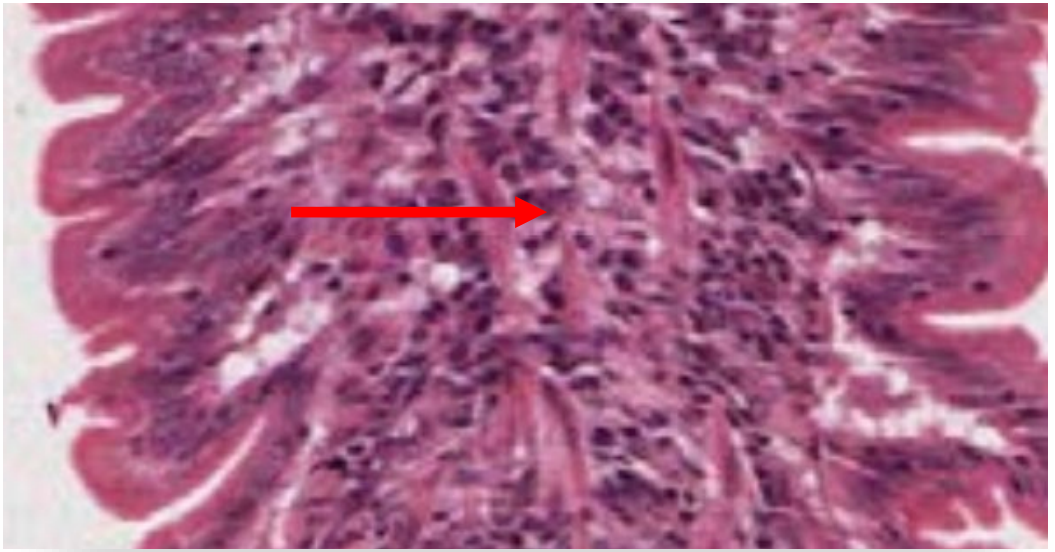
Can we explain Suki's weight loss?

Determinants of diffusion (Fick's Law)

- Concentration difference
- Surface area of the membrane
- **Diffusion distance (→) (in lamina propria)**

Diffusion α $\frac{\text{Concentration difference}}{\text{Diffusion distance}}$

Normal villus



SUKI biopsy
Longitudinal section of one villus

Have you created a flow diagram to explain mechanism of :

- Vomiting
- Diarrhoea
- Weight loss

Mid-semester test review

MST

- Well done!

- Adjusting expectations, identifying opportunities
  - We understand that some of you will be disappointed
  - Challenging course
  - Challenging subject
    - First experience of ‘system-based’ Veterinary Bioscience approach
    - Understandably steep learning curve

Feedback

- Test open for you to review your responses
  - Each subject provides feedback differently
  - Do not use the approach in this subject as a reason to ask other subject coordinators to re-open their tests

- No marking key
  - You will learn a lot more by critically examining your responses and looking up answers as needed
  - If anything remains unclear – contact subject coordinator, who will be happy to provide clarification

- Test review with subject coordinator
  - Priority for students that scored <60%

Assessment is part of the learning experience

- MST is a ‘mini’ end-of-semester exam
  - Same format (MCQ, short answer, clinical scenario) but a couple of key differences:
    - Duration - 2 hours duration (plus 15 mins reading time)
    - Closed book

- Reflect on exam technique
  - Approach
    - Which section first?
    - How often did you look up your notes?
    - Did you answer the question that was asked?
    - What can you learn about your approach to the clinical scenario?
  - Timing
    - How much time did you spend looking up answers?
    - Did you write too much for the value of a question?

- Study skills
  - Links to Academic Skills Unit resources in ‘Subject Information’ module
  - Individual consultations are available

Let’s review

- 15 MCQs
  - Not going to review these – hopefully you can work out the right answers
- Short-answer section
  - Note that marking of fill-in-blanks questions might look strange
  - Be specific with your responses
    - Use terminology correctly where possible
    - Spelling mistakes forgiven, unless where they precluded interpretation

Question 19

3 pts

When entering the abdominal cavity of a dog via a ventral midline approach, a segment of intestine readily protrudes through the incision, as shown in the image above. Answer all parts of this question.

A. Which part of the intestinal tract is this likely to be? [1 mark]
B. Briefly explain how you reached this conclusion. [2 marks]

Question 21

5 pts

Briefly explain how the clinical presentation of a cow with oesophageal obstruction would differ from that of a horse with oesophageal obstruction. Also, briefly explain why the treatment of oesophageal obstruction in a cow is much more urgent compared with oesophageal obstruction in a horse.

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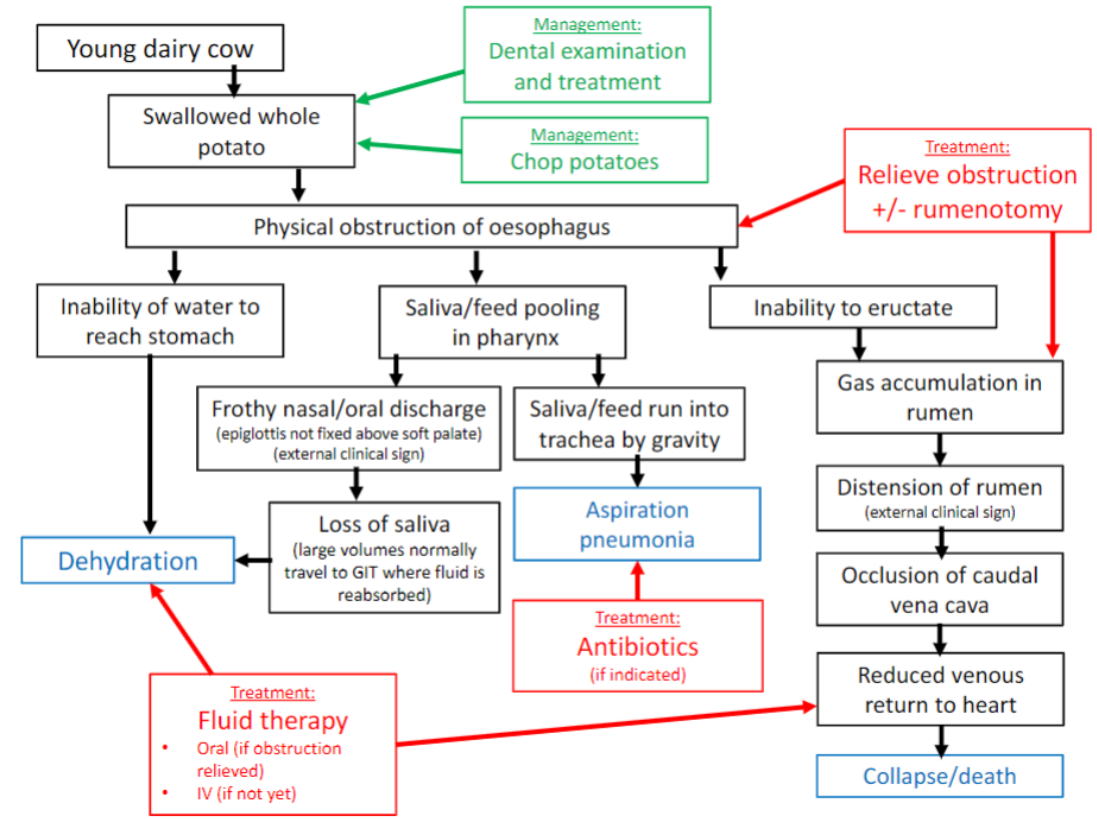

Extended-response section

Questions 22 to 24 all relate to this clinical case scenario

You have been presented with Bluey, a 5-month-old female desexed Blue Heeler dog that has been reported by the owner to have been vomiting intermittently for 36 hours. There is no evidence of diarrhoea and she is up to date with vaccinations. On clinical examination, Bluey is depressed and appears to be dehydrated.

Question 22

6 pts

How would you distinguish between whether Bluey had been vomiting or regurgitating? In your answer, outline the differences between these processes **and** what questions you would ask the owner about what they had observed.

Question 23

4 pts

Suggest **two (2)** plausible causes of vomiting in this case, and for **each** cause explain the mechanism by which the vomiting would have been initiated.

Question 24

6 pts

You decide to provide anti-emetic therapy for Bluey. List **two (2)** classes of antiemetic drugs that would be appropriate to use for Bluey. For **each** class of antiemetic drug, explain why you have chosen this class of drug based on its mode of action and how this relates to your suggested causes of vomiting in Bluey's case.

Assessment for Suki the Cat

- Quiz – all students
  - Released this afternoon (May 11)
  - Complete by 11:59pm on Wednesday May 17
  - Ensure that you have studied lectures related to diarrhoea
- Contributes 3.75% to overall Digestive System grade

Graduate Student Group Assignment

- Flow diagram assignment
- 5% final mark
- Details on Canvas under ‘Assignments’ or via the case study module
- Check groups – same as Cells to Systems
- Due by 5pm next Friday (May 19)